

MIL-HDBK-1010B

SYSTEM INTERNATIONAL

1 JANUARY 1998

SUPERSEDING

MIL-HDBK-1010A

AUGUST 1992

MILITARY HANDBOOK

COST ENGINEERING: POLICY AND PROCEDURES

AMSC N/A

AREA FACR

DISTRIBUTION STATEMENT A. APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED

ABSTRACT

Current criteria and procedures are presented for use in the preparation and review of the Activities'/Team 1391 Plus (1391P) and Parametric Cost Estimate (PCE) budget estimate documentation, for MILCON construction and operations/maintenance projects at all naval shore facilities. General guidance for construction cost estimates and other types of cost estimates is also provided.

Projects have four parts of equal importance: requirement, justification, scope, and cost. The preparation of documents and the reviews are usually satisfactory when full attention is given to these four parts.

MIL-HDBK-1010B

FOREWORD

This military handbook presents the Naval Facilities Engineering Command (NAVFACENGCOM) criteria and procedures related to the preparation and review of the activity's 1391 Plus (1391P), and the Engineering Field Division/Activities (EFD/EFA) Parametric Cost Estimates (PCE) for the Military Construction Program, including Operations and Maintenance (O&M) projects. General guidance for other types of cost estimates is also provided. This handbook is intended to be a cost estimate preparation and review guide, and should not be used exclusive of full consideration of scope, additional functional features (Built-In Equipment), and supporting facilities.

MIL-HDBK-1010B provides guidance, procedure, and examples. The primary facility guidance costs given are for two consecutive fiscal years based on an area cost factor of 1.00. These adjusted historical unit costs have been escalated to a common date for each fiscal year, and have been normalized for size and area cost factors. Supporting facility guidance costs for three years are shown.

Area costs factors for overseas projects are based upon the Foreign Exchange rates shown. Variance in the exchange rate may cause a variance in the area cost factor.

Recommendations for improvement of this handbook are encouraged and should be furnished to the appropriate EFD point of contact as noted in par. 1.5.

THIS HANDBOOK SHALL NOT BE USED AS A REFERENCE DOCUMENT FOR PROCUREMENT OF FACILITIES CONSTRUCTION. IT IS TO BE USED IN THE PURCHASE OF FACILITIES ENGINEERING STUDIES AND DESIGN (FINAL PLANS, SPECIFICATIONS, AND COST ESTIMATES). DO NOT REFERENCE IT IN MILITARY OR FEDERAL SPECIFICATIONS OR OTHER PROCUREMENT DOCUMENTS.

MIL-HDBK-1010B

COST ENGINEERING: POLICY AND PROCEDURES

CONTENTS

Index of Figures	viii
------------------	------

PART 1: Introduction	1
1.1 Purpose	1
1.2 Background	1
1.3 Importance	1
1.4 Cancellation	1
1.5 Comments or Suggestions	1
 PART 2: SCOPE CONSIDERATIONS	 3
2.1 Introductory Paragraph	3
2.2 Operation and Maintenance Support Information (OMSI)	3
2.2.1 Composition of OMSI	4
2.2.2 Complexity of OMSI	5
2.2.3 OMSI Estimate	8
2.2.4 Minimum OMSI Estimates	9
2.3 Intrusion Detection Systems (IDS)	10
2.3.1 Non-MCON Fundable IDS	11
2.3.2 Technical Support	12
2.4 Land Acquisition	12
2.5 Hyperbaric Requirements	12
2.6 Shielding Requirements	12
2.6.1 Tempest Shielding	12
2.6.2 Coordination Required to Meet Objectives	13
2.7 Uninterruptible Power System (UPS)	13
2.8 Telephone/Communications Installation	13
2.9 Built-in Retrieval Equipment Racks (Warehouses)	14
2.9.1 MCON Funded	14
2.9.2 OPN Funded	14
2.9.3 Warehouse Design	14
2.10 Asbestos Related Work	15
2.11 Access Roads (Off-Station)	15
2.12 Industrial Ventilation	15
2.13 Direct Digital Control System (DDC)	16
2.14 Anti-terrorism Force Protection Program	16
2.15 Computation of Gross Area	17
2.16 Barracks Area Requirements	17
2.16.2 Navy New Construction Standard	20
2.16.3 Marine Corps New Construction Standard	20
2.16.4 Net Living Area	23
2.16.5 Gross Module Area	23
2.16.5 Gross Building Area	24

MIL-HDBK-1010B

PART 3:	DD Form 1391 Plus Development/PCE	25
3.1	Purpose	25
3.1.1	Parts of a DD Form 1391 Plus Package	25
3.1.2	Elements	26
3.1.2.1	Discussion of the five elements	26
3.1.2.2	1391 Blocks 1 through 12	26
3.2	Instructions for DD Form 1391	27
3.3	Instructions for Budget Estimate Summary Sheet	30
3.4	Instructions for Primary Facility Unit Cost Development	32
3.4.1	Guidance Cost Priorities	32
3.4.2	Guidance Cost Adjustment	32
3.4.3	Cost for Additional Work	32
3.4.4	Gross area calculations	32
3.4.5	Adjusted Unit Cost	33
3.4.6	Size Adjustment Factor	33
3.4.7	Escalation Factors	33
3.4.8	Area Cost Factors	33
3.5	Instructions for Supporting Facilities Cost Development	35
3.5.1	Special Foundation Features (01.02)	35
3.5.2	Site Preparation (17.XX)	35
3.5.3	Site Improvements (18.XX)	35
3.5.4	Site Civil/Mechanical Utilities (19.XX)	35
3.5.5	Site Electrical Utilities (20.XX)	35
3.5.6	Hazardous Removal (30.XX)	36
3.5.7	Supporting Facilities - Cost	36
3.5.8	Pricing Sources	36
3.6	Proposed Site Plan.	40
Part 4:	Parametric Building Models for Windows (PBMW)	41
4.1	Purpose	41
4.1.1	Caution	41
4.2	Minimum System Requirements	41
4.2.1	Hardware	41
4.2.2	Software	42
4.2.3	Network	42
4.3	Methodology	42
4.4	The PBMW Modeling Process	43
4.5	Definitions	44
4.6	Rules of Measurement	45
4.7	Traces Generic Work Breakdown Structure	46
4.8	The Project Tree Organization	47
4.8.1	Primary Facilities	47
4.8.1.1	Building Shell	47
4.8.1.2	Functional Space Area	49
4.8.2	Supporting Facilities	50
4.8.3	Modifiers	50

MIL-HDBK-1010B

4.9	Building Model Groups	51
4.9.1	Building Model Types	51
4.9.2	Library of Functional Spaces Areas	51
4.10	Sitework Model Groups	52
4.11	Composite Assemblies	52
4.12	Detailed Assemblies	52
4.13	Detailed Instructions	53
4.14	Preparation of a DD1391	53
Part 5: Construction Cost Estimates		54
5.1	General	54
5.1.1	Detailed Cost Estimates	54
5.1.2	Uses of the Cost Estimate	54
5.1.3	Final Government Estimate	54
5.1.4	Structure of Estimates and Work Requiring Multiple Estimates	54
5.2	Preliminary (35 Percent) Estimate	55
5.2.1	Preliminary Estimate	55
5.2.2	Preliminary Estimate Should Monitor the Estimated Construction Cost	55
5.3	Prefinal Estimates	55
5.3.1	Prefinal Requirements	55
5.3.2	Success Estimates	56
5.3.3	Success (Computer Requirements)	56
5.4	Final Estimate	57
5.5	Success Examples	57
5.5.1	Summary Report	57
5.5.2	System Report	57
5.5.3	Assembly Category Report	58
5.5.4	Contractor Mark-Up Report	58
5.5.5	Detailed Report	58
5.5.6	Error Report	58
5.5.7	End Item Report	58
5.5.8	Property Report	58
5.5.9	Specification Report	58
5.5.10	Labor Summary Report	58
PART 6: OTHER TYPES OF ESTIMATES		59
6.1	Estimates for Change Orders	59
6.2	Negotiated Construction Contracts	59
6.3	Estimates for Special Projects	59
6.3.1	Cost Basis	59
6.3.2	Escalated Costs	60
6.4	Estimates for Family Housing	60
6.4.1	Site Engineering Investigations	60
6.4.2	Pricing for Family Housing	60

MIL-HDBK-1010B

6.4.3	Preparation of New Family Housing Project Budget	61
6.4.4	Preparation of Draft DD-1391 and Supporting Cost Data	61
6.4.4.1	DD-1391 Preparation	61
6.4.4.2	Dwelling Unit Costs	61
6.4.5	Special Construction Features	62
6.4.6	New Family Housing Project Budget	62
Part 7:	BLANK FORMS AND REFERENCES	65
7.1	DD Form 1391	66
7.2	Primary Facility Unit Cost Development	67
7.3	Supporting Facility Cost Development	68
7.4	Budget Estimate Summary Sheet	69
7.5	Change Order Summary Sheet	70
7.5.1	Change Order Sheet NAVFAC 4330/43 8/88 Back-up	70
7.5.2	Change Order Sheet NAVFAC 4330/43 8/88 Summary	71
7.6	SI Conversion Factors	72
7.7	Units of Measure and Their Symbols	73
7.8	Acronyms and Abbreviations	75
7.9	Air Conditioning Tonnage Guide	80
7.10	Plumbing Fixture Count	80
7.11	Cover Sheet / Check List for 1391P	81
7.12	Size Adjustment Chart	82
7.13	Work Breakdown Structure - Subsystem Level	84
Part 8	Appendix	99
8.1	Unit Cost Data for DoD Facilities	100
8.2	U. S. Area Cost Factors	104
8.3	OCONUS Area Cost Factors	114
8.4	NAVFAC Cost Escalation Index	117
8.5	Supporting Facility Guidance Cost	118
8.6	Success Estimate	128
REFERENCES		140

Index of Figures

Figure 1: Form DD1391 (numbered).....	29
Figure 2: Budget Estimate Summary Sheet (numbered).....	31
Figure 3: Primary Facility Unit Cost Development.....	34
Figure 4: Back Up Estimate Sheet 1.....	37
Figure 5: Back Up Estimate Sheet 2.....	38
Figure 6: Back Up Estimate Sheet 3.....	39
Figure 7: DOD Housing Cost Model.....	63
Figure 8: New Family Housing Project Budget.....	64
Figure 9: Form DD1391 (blank).....	66
Figure 10: Primary Facility Unit Cost Development (blank).....	67
Figure 11: Supporting Facility Cost Development (blank).....	68
Figure 12: Budget Estimate Summary Sheet (blank).....	69
Figure 13: Change Order Summary -Front (blank).....	70
Figure 14: Change Order Summary -Back (blank).....	71

PART 1: Introduction

1.1 Purpose.

This handbook is a guide for the preparation of planning cost estimates in support of the Shore Facilities Planning System, Construction Cost Estimates, and other estimates. It supplements instructions and direction provided in the instructions listed in par. 1.2.

1.2 Background.

OPNAVINST 11010.16, Command Responsibility for Shore Activity Land and Facilities establishes the Shore Facilities Planning System. NAVFACINST 11010.44, Shore Facilities Planning Manual carries out the system and requires activity submission of a planning estimate with cost backup and other data, to propose a project for the Military Construction Requirements List.

1.3 Importance.

The importance of an accurate planning cost estimate cannot be overemphasized, as it could be the determining factor as to whether or not the project is included in the budget year program.

Although requirements and justifications are important parts of project submittals, this handbook deals only with scope and cost.

Scope is included because an estimate is no better than the definition of scope that has been determined. An incomplete scope will result in an incomplete proposed project cost.

1.4 Cancellation.

This handbook, MIL-HDBK-1010B, dated January 1998, cancels and supersedes MIL-HDBK-1010A, dated August 1992.

1.5 Comments or Suggestions.

You are encouraged to advise the Engineering Field Division (EFD) Planning Division (Code 20) or the Cost Engineering Branch of errors, conflicts, or omissions detected while using this handbook, as well as to suggest improvements which will help you produce higher quality planning cost estimates. Advice or comments should be forwarded to the EFD/EFD Cost Engineering Branch to be considered for the MIL-HDBK-1010 update. Points of contact are as follows:

MIL-HDBK-1010B

<u>Engineering Field Division or Activity</u>	<u>Cost Engineering Organization</u>	<u>Planning Organization</u>
Atlantic Division Norfolk, VA	(757) 322-4407	(757) 322-4900
EFA Chesapeake Washington, DC	(202) 685-3124	(202) 685-3072
Northern Division Lester, PA	(610) 595-0578	(610) 595-0756
EFA Northwest Poulsbo, WA	(360) 396-0947	(360) 396-0901
Pacific Division Pearl Harbor, HI	(808) 474-5349	(808) 471-3088
Southern Division Charleston, SC	(803) 820-7463	(803) 820-5786
Southwestern Division San Diego, CA	(619) 532-3713	(619) 532-3160
EFA West San Bruno, CA	(415) 244-2680	(415) 244-3004
NAVFAC HQ Alexandria, VA	(703) 325-0451	(703) 325-7360

PART 2: SCOPE CONSIDERATIONS

2.1 Introductory Paragraph.

The Primary Facility Unit Cost Development Sheet must include separate entries for specific features of additional cost. Certain features and their cost derivation are discussed below. Other specific features may not be discussed in this section, but should be shown as a separate item to emphasize significant cost.

2.2 Operation and Maintenance Support Information (OMSI).

OMSI is also referred to as "Technical Operating Manuals". Upon completion of construction, users and maintenance providers need clear, comprehensive information to properly operate, maintain and repair the new facility and its systems. This need includes detailed information on both architectural and mechanical/electrical systems. OMSI is to be included on most vertical construction projects. OMSI is generally not required on horizontal construction projects such as paving, drainage, and dredging unless other more complex systems are also included. The OMSI product is provided in the form of manuals prepared by the Architect-Engineer (A-E) designer during the construction period. In preparing the OMSI, the A-E uses the many submittals made by the construction contractor (Product Data, Shop Drawings, Reports Operation and Maintenance (O&M) Data, etc.) to form the basis for preparation of user friendly manuals which accurately reflect the as-built conditions. Based on the construction submittals the A-E also prepares detailed step-by-step instructions on the operation, maintenance, and repair of the Primary Systems in the OMSI Part II. The principal OMSI elements covered by the manuals are as follows:

- a) Design Concept Data and Basis of Design
- b) Basic Data needed for preparation of Facilities Support Contracts and Performance Work Statements (FSC/PWS)
- c) Operating Procedures for Startup and Shutdown; Emergency and Safety Instructions
- d) Operation and Maintenance Technical Data and As-built Product Documentation
- e) Maintenance Requirements, Test Equipment, and Special Tools
- f) Preventive Maintenance Requirements and Schedules

g) Troubleshooting Guide, Diagnostic Techniques, Repair Procedures

h) Supply support (repair and spare parts, fuels, lubricants, etc.)

i) Extended Special Warranty Information

j) Environmental Considerations

k) Training Plan, Staffing Requirements, Personnel Qualifications

2.2.1 Composition of OMSI.

OMSI Manuals consist of three parts: OMSI Part I Facility Information, OMSI Part II, Primary Systems Information, and OMSI Part III, Product Data.

a. OMSI Part I, Facility Information: This portion of the OMSI Manuals contains the basic information needed on a daily basis by the owner or tenant of the facility. Examples include general facility and system descriptions, utility connection and cut-off plans, safety hazards, and warranty information. Also included in this portion of the manuals is the detailed information needed to prepare Facility Service Contracts (FSC) and Performance Work Statements (PWS) for O&M and Custodial Service Contracts. Examples of this information include area totals for floor coverings, wall and ceiling surfaces; number, types and sizes of luminaries, lighting fixtures, bathroom fixtures, windows and HVAC filters.

b. OMSI Part II, Primary Systems Information: This portion of the OMSI Manuals provides detailed operation, preventive maintenance, repair, and manufacturer's O&M data for selected systems. This information includes items such as normal and emergency operating procedures, flow diagrams, Preventive Maintenance (PM) requirements, spare parts, troubleshooting, repair procedures, and warranty provisions. Systems typically included are Heating, Ventilating and Air Conditioning (HVAC), Direct Digital Controls (DDC), Fire Protection and Emergency Power. Complex facilities (e.g., hospitals or waste treatment plants) may include fifteen or more systems, while less complex facilities (e.g., administrative buildings or bachelor quarters) may include only two or three systems. Faster repairs, reduced down time, and more effective preventive maintenance will result from using information in this part of the manuals.

c. OMSI Part III, Product Data: This portion of the OMSI Manuals provides a record of the as-built products, materials and equipment used in the facility construction. This includes Manufacturer's Product Data submittals required by Divisions Two through Sixteen of the construction specifications. Examples of Product Data include Manufacturer's Catalog Data, data sheets, Test Reports and Warranty sheets. Also included are Shop Drawings relevant to the operation and maintenance of the facility or system (except those included in Part II, Primary Systems Information).

The Product Data in Part III is organized by the divisions and sections of the construction specifications for quick identification of the exact product installed, part number, manufacturer, etc.

Part III includes architectural and other product information for items such as ceiling tile, wall covering, carpeting, lavatory accessories, and lighting fixtures.

Often overlooked in importance, the use of this information will help preserve a facilities appearance for many years through product-specific maintenance and replacement of its' architectural features.

2.2.2 Complexity of OMSI.

Table 1 lists examples of facilities which would usually be classified as Complex OMSI. In most cases, these facilities will have more than three systems addressed in OMSI Part II, Primary Systems Information. **Table 2** lists examples of projects, usually classified as Non-Complex OMSI. These projects normally will have no more than three systems addressed in OMSI Part II. . Examples of projects which do not usually require OMSI are shown in **Table 3**. **Table 3.1** lists examples of typical systems included in OMSI Part II, Primary Systems Information. Note that the project complexity tables are to be used as preliminary guidelines only. Actual complexity and the actual Part II systems selected should be adjusted as the project documentation and design are finalized.

Table 1

Examples of Facilities Usually Classified as a Complex OMSI
(i.e., usually more than three systems addressed in OMSI Part II)

FACILITY TYPE	BASIC
Petroleum, Oil & Lubricant (POL) Facilities	120
Computer Operations Center (Large/Complex)	143
Training Facilities with Complex Systems	171
Aircraft Maintenance Shops	211
Missile Assembly & Maintenance Shops	212
Ship Maintenance Shops	213
Laboratories	310
Liquid Fuel Storage - Bulk	411
Central Refrigeration Plants	431 & 826
Medical Facilities	500
Power Plants (750 KW and Larger)	811
Heating Plants (950 MBTUH and Larger)	821
Industrial Waste & Sewage Treatment Plants	831
Water Treatment Facilities	841
Miscellaneous Utilities	890

Table 2

Examples of Facilities Usually Classified as a Non-Complex OMSI
(i.e., usually no more than three systems addressed in Part II)

FACILITY TYPE	BASIC
Warehouse - General	441
Administrative Facilities	600
BEQ/BOQ	721 & 724
Community, Morale, Recreation	740
Operation & Training Fac. (small/non	100

Table 3
Examples of Facilities Usually Not Requiring OMSI

FACILITY TYPE	BASIC CATEGORY
Airfield Pavement/Taxiways/Aprons	110-116
Dredging	165
Open Storage	451
Roads and Streets/Pavements	850/851

Table 3.1

Typical Systems Included in
OMSI Part II, Primary Systems Information

1. HVAC	21. Compressed Air/Vacuum
2. Industrial	22. Pneumatic Tube
3. Cooling Tower Water	23. Blast Doors with
4. Steam/Hot Water Boiler	24. Control Monitor and
5. Steam Turbine/Generator	25. Emergency Power
6. Direct Digital Control	26. Intrusion Detection
7. Space Temperature	27. Radio Paging
8. Carbon Dioxide (CO ₂)	28. Switchgear and Wiring
9. Underfloor Fire	29. Aircraft Refueling
10. Fire Alarm	30. Bulk Fuel
11. Fire Suppr. (Wet/Dry	31. Water Treatment
12. Medical Gas	32. Waste Water Treatment
13. Nurse Call	33. Storage/Supply
14. Medical Public Address	34. Pier Utilities
15. Medical Pure Water	35. Diesel Electric
16. Medical Waste Handling	36. Uninterruptable Power
17. Medical Waste Incinerator	37. Special Power (400hz)
18. Medical Case Cart	38. Special
19. Emissions Monitoring	39. HEMP Shielding
20. Envir. Remed. (Pump &	40. Cathodic Protection

NOTES:

1. The above list is not inclusive but represents the project systems normally included in the OMSI Part II.
2. Some systems above will have one or more subsystems which may be included separately in OMSI Part II; e.g., Aeration, Screening, Flocculation, Chlorination, etc. listed under Water Treatment.

2.2.3 OMSI Estimate.

When estimating the cost of OMSI for a specific project, use the best available information. If a good basis to make the estimate does not exist, Table 4 should be used for a budget or preliminary estimate based upon a percentage of the primary facility cost plus applicable supporting facility costs. If OMSI is required for the supporting facilities (such as utilities), add these costs to the primary facility costs before calculating the OMSI estimate. The percentage selected (within the ranges shown) should be based on the relative complexity of the facility and the number of specific systems to be covered in Part II of the OMSI Manuals. OMSI cost shall be a separate line item on DD Form 1391 (Block 9) titled "Technical Operating Manuals" and on the Primary Facility Cost Development Sheet. OMSI should be included in the Block 10 narrative of the DD Form 1391 under Description of Proposed Construction.

Table 4

Examples of OMSI Cost for Budget or Preliminary Estimates

Primary plus Applicable Supporting Facilities Cost	<u>OMSI Cost</u>	
	Complex	Non-Complex
Below \$5,000,000	1.50 - 2.50%	0.50 - 1.50%
\$5,000,000 to 20,000,000	1.25 - 2.00%	0.75 - 1.25%
\$20,000,000 to	0.95 - 1.85%	0.50 - 1.10%
Above \$50,000,000	0.50 - 1.20%	0.25 - 0.70%

NOTES:

1. Table 4 shows estimated cost of OMSI as a percentage range of the total of primary facility plus applicable supporting facilities.
2. Use higher range for more complex projects. For example, an Industrial Waste Treatment Plant with an \$18 million facility cost would have an estimated OMSI cost of \$333,000 (\$18,000,000 X 0.0185).
3. For A non-complex Bachelor Quarters (\$9 million), the OMSI budget may be more appropriately estimated using the lower or middle percentage range of, say, 0.95%: \$9,000,000 X .0095 = \$85,500.

2.2.4 Minimum OMSI Estimates

A) The minimum estimate for a small complex OMSI project will be approximately \$30,000.

B) The minimum estimate for a small non-complex OMSI project will be approximately \$20,000.

2.3 Intrusion Detection Systems (IDS)

IDS equipment acquisition and installation funds are provided from OPN (Other Procurement Navy). Facility items that are MCON or BRACON project funded in support of IDS include equipment spaces, alarm control centers, security fencing, door hardware, security lighting, and permanently installed power, control and utility systems for IDS.

The Director, Naval Criminal Investigative Service (NCIS) budgets and provides funds for IDS planning and design, procurement, and installation costs for MCON projects [IDS for BRAC is the responsibility of the Major Claimant (for Navy Projects) to budget and fund the requirements for IDS planning, design, procurement, and installation of equipment]. Facility planning, design, and construction schedules of all MCON and BRAC projects requiring IDS should be coordinated with NCIS on a semiannual basis (1 April and 1 November) for current and outyear projects. Preliminary DD 1391 facility studies, and floor plans at Project Engineering (PE) phase and 100% design are required for IDS project submittal NCIS will provide IDS equipment such as card readers, CCTV systems, security and monitoring control equipment, etc. for MCON IDS.

IDS for Marine Corps projects is separately funded and managed by CMC POS-16. Marine Corps projects should be coordinated directly with CMC POS-16. Marine Corps projects also require design coordination with NISE East, Charleston, SC but do not require NCIS coordination.

The Navy and Marine Corps projects must be coordinated with the customer and activity security personnel to ensure that systems are compatible with existing activity base wide security systems. For assistance in preparing planning documentation, please contact Charles Mandeville (NAVFAC).

Facility support, such as utilities, conduit runs, equipment space, building, and conventional fencing required to support IDS associated with a MCON project are properly chargeable to MCON funds and should be included in the MCON project scope. Refer to NAVFAC DM-13.02, Commercial Intrusion Detection System (IDS) for help in determining facility IDS requirements.

POCS:

NCIS Angelo Tjoumas, Code 24C1, DSN 288 9097
NAVFAC Construction Ralph Gruen, Code 3232, DSN 221-7539
NAVFAC Design Charles Mandeville, NAV FAC, Code 15C, DSN 262-4208,
757 322-4208
USMC Major Roland, Code POS-16, DSN 224-4177
NISE EAST Frank Mazzone, Code 741, DSN 563-2030, Ext 5411, 803-
974-5411

2.3.1 Non-MCON Fundable IDS.

IDS installation can be divided into five general categories:

- a) Category A: Navy MCON funded projects;
- b) Category B: Nuclear ordnance storage sites;
- c) Category C: Conventional arms, ammunition, and explosives storage sites (AA&E);
- d) Category D: Marine Corps funded projects; USMC projects must be coordinated with POS-16 and NISE East.
- e) Category E: All other special projects and non-MCON funded projects.

Planning, design, and installation of IDS Categories A, B, and C are the responsibility of COMNISCOM (Naval Service Investigative Command). The A&E shall coordinate IDS power requirements and conduit runs for IDS Categories A, B, and C with the appropriate contacts within COMNISCOM.

For Category D projects, consult area project manager for guidance to determine if IDS will be A&E designed.

Category E projects are planned and designed by the A&E utilizing commercial systems for installation by the construction contractor. Identify areas requiring IDS and types of systems and sensors proposed.

Claimant, user, and COMNISCOM, depending on current policy, will budget for and fund non-MCON IDS requirements. These commands must be notified of a project's non-MCON IDS requirements and your need for data on facility support requirements. This should generally result in an IDS Engineering Plan (IDSEP). Customer must fund the IDSEP.

2.3.2 Technical Support.

Technical support for IDS design is available on a reimbursable basis from NISE-East, Charleston, SC. This support includes guidance on scope and technical review of compiled IDS designs at appropriate steps in project development and design. NAVFACENGCOM will attempt to identify MCON projects requiring major IDS and request NISE-EAST, Charleston, SC prepare an IDSEP for each.

2.4 Land Acquisition.

Obtain instructions from major claimant and EFD/EFA Real Estate Personnel.

2.5 Hyperbaric Requirements.

Naval Facilities Engineering Service Center, East Coast Detachment, Code 61 is responsible for executing the design and procurement phases of shore based hyperbaric facilities. When the project scope includes provisions for hyperbaric facilities, you must contact Naval Facilities Engineering Service Center, East Coast Detachment, Code 61 to make appropriate arrangements for the design, procurement, and installation of the required hyperbaric facilities and the associated cost estimate. The point of contact is Terry Hayes DSN 288-8766, 202-433-8766.

2.6 Shielding Requirements

SHIELDING SYSTEMS Communications and electronics projects for various customers may require Electromagnetic Shielding for all or part of the building. Shielding may be accomplished at the equipment level or at the building or room level depending upon the customer and the equipment requirements. In most cases for larger buildings, global shielding systems are most cost effective, the customer must dictate the level of shielding isolation required. For High Altitude Electromagnetic Shielded (HEMP) facilities designers should use Military Handbook 423 for shielding construction details.

2.6.1 Tempest Shielding.

Customers with TEMPEST shielding requirements must review and coordinate requirements with Naval Command, Control and Ocean Surveillance Center, Naval In Service Engineering East (NISE) Charleston, SC, Detachment. NISE must validate all TEMPEST shielding requirements.

2.6.2 Coordination Required to Meet Objectives.

Satisfying shielding objectives is often very difficult; it requires close coordination between the customer, the designer, and the construction contractor to establish this scope requirement. Good information transfer from designers to ROICC personnel is essential. The use of expert consultants during design and construction, and the development of both interim and final testing plans and criteria, should be evaluated and incorporated when appropriate. The NAVFAC center of expertise for TEMPEST, HEMP, and RFI shielding is Code 15C. Consult MIL-HDBK-1195, Radio Frequency Shielded Enclosures for information on these subjects.

POCS:

NISE Doug Johnson Code J723, DSN 563-2030, ext. 5423, 803-974-5423
NAVFAC Charles Mandeville NAV FAC Code 15C DSN 262-4208, (757-322-4208)

NAVFAC - Richard Paradis - NAVFAC Code 15C DSN 262-4117 (757-322-4447)

and NFESC Sitram Rudrapattana, ECDET Code 65, DSN 288-2515.

2.7 Uninterruptible Power System (UPS).

Navy customers require a UPS for selected electronics equipment and associated data processing equipment to meet operational requirement and to prevent equipment damage and loss of data during commercial power system problems. UPSs required solely for support of an item of personal property (as defined in OPNAVINST 11010.20E, p. 6-1) may not be purchased with MCON/BRACON funds, and must be separately justified and budgeted by the major claimant. NFESC, ECDET, Code 65 will use a master contractor to supply GFE-UPSs to Navy customers on a reimbursable basis.

POC - Carl Fredericks, NFESC, ECDET, Code 65, DSN 288-2208.

2.8 Telephone/Communications Installation

The Naval Computer and Telecommunications Command and the Naval Facilities Engineering Command signed a Memorandum of Understanding in 1993 which transferred the cost for interior and exterior building wiring to the NAVFAC MCON/BRACON budgets. This cost includes the cost of cabling from the Local Exchange Carrier to the customer receptacle. The customer must fund the telephone instruments and other equipment. The cost of the cable distribution transport systems including manholes, duct banks, cable trays, and handholes should be included in the MCON/BRACON budgets. The MCON/BRACON budgets only covers government owned

cable plant. If the cable plant is leased or owned by the Local Exchange Carrier, other resources are required. During the planning process the appropriate Naval Computer and Telecommunications Command (NCTC) or the Base Communications Office should be contacted and should review plans and specifications for cable installations. The cost of cabling should be included on the DD1391 Block 9; under Information Systems. Project design scopes should include all backbone, horizontal, premises, and station cabling systems.

POC Charles Mandeville, NAVFAC Code 15C, DSN 262-4208
(757-322-4208)
Bruce Ulizio Code 3213, DSN 221-7485.

2.9 Built-in Retrieval Equipment Racks (Warehouses).

Policy on funding specialized equipment in automated warehouses is as follows:

2.9.1 MCON Funded.

If the project includes a guide wire or guide rail built into the facility, include the cost of the guide wire or rail system, vehicles which ride on the system (system captive), and the storage racks serviced by the system in the MCON project.

2.9.2 OPN Funded.

If the retrieval system does not include a built-in guide wire or rail system, the retrieval vehicles and racks are to be identified as collateral equipment.

2.9.3 Warehouse Design.

The design of all warehouses must be coordinated with Naval Supply Systems Command (NAVSUPSYSCOM) as the Navy's expert in warehouses.

NAVSUPSYSCOM must formally approve the design concept prior to achieving a 35 percent design. To help with the design concept, NAVSUPSYSCOM has developed a computer program to determine the least cost alternative for various stacking heights and retrieval systems. As the foot print and stacking height affect the project cost, and some retrieval systems are MCON funded, these decisions must be made prior to starting design. Coordinate design with NAVSUPSYSCOM.

POC - Dennis O. Talton, NAV FAC Code 15C, DSN 262-4211, Commercial (757) 322-4211.

2.10 Asbestos Related Work.

A&E firms are finding it difficult, if not impossible, to obtain professional liability insurance for work involving asbestos, hazardous waste, and pollution abatement. The Federal Acquisition Regulation (FAR) does not require A&E firms to carry professional liability insurance. NAVFACENGCOM does not have the authority to provide blanket indemnification for work involving hazardous waste. NAVFACENGCOM policy is that when asbestos or other hazardous waste will be encountered, or when there is a good probability of asbestos or other hazardous waste, note this fact in the Commerce Business Daily (CBD) synopsis for any affected contract. We should NOT include this warning in every CBD synopsis as a matter of routine; it should only be used where the hazards cited are known or probable. During interviews the willingness of each firm to undertake any required asbestos, hazardous waste, or pollution abatement work is to be clearly established and made a matter of record. Please continue to keep NAVFACENGCOM informed of problems in this area.

POC - Truman Seamans, NAV FAC 15C, 757-322-4210.

2.11 Access Roads (Off-Station)

Off-Station access road construction or improvements, including right-of-way, generated by a MCON/BRACON project, shall not be considered as being part of the scope of the project. Funds for access or replacement roads are separately budgeted and administered. If there is a need for such roads, a brief statement shall be included in the 1391p OR PCE documentation. In addition, an Access Road Needs Report shall be prepared and submitted in accordance with OPNAVINST 11210.1B.

POC - Mark Kraynak, Code 331 DSN 221-0984 COM 703-325-0984

2.12 Industrial Ventilation

Many industrial processes and maintenance operations require industrial ventilation (IV). IV also protects Navy workers' health and safety in facilities housing such operations as indoor firing ranges, research and operational laboratories, pesticide mixing areas, and health care facilities. Engineering and design information can be found in MIL-HDBK-1003/17C, Industrial Ventilation Systems on the CCB (Construction Criteria Base).

IV has proven to be troublesome in Navy facilities and is an area of concern to CNO. CNO N454 partially funds NFESC IV efforts for

all Navy activities under the NAVOSH Program. NFESC 431 services available include:

1. Basic concept design for IV systems (NFESC 431 does not produce full engineering designs).
2. Design review. Add NFESC 431 to your review list at an early stage in the project design to ensure timely comments. Beginning with the preliminary design stage can avoid unnecessary redesign.
3. System testing. Confirm that the IV system complies with federal OSHA design regulations and consensus design standards.

POC - **Kathleen Paulson**, NFESC 431, at DSN 551-4984, commercial (805) 982-4984, facsimile (805) 982-1409, Internet kpaulso@nfesc.navy.mil.

2.13 Direct Digital Control System (DDC)

DDC is recommended for all major HVAC systems. NFGS-15190A is the guide specification to use for direct digital control systems and is available on the CCB. Design the systems with a minimum number of points - using the "keep it simple" design philosophy. Provide a standalone system and allow operator interface using a workstation. The Naval Facilities Engineering Service Center can provide control system design and cost assistance.

POC - **Karl Swanson**, DSN 551-3901, 805-982-3901, FAX 805-982-5388, or by Internet at ktcs swanson@nfesc.navy.mil.

2.14 Anti-terrorism Force Protection Program

The Department of Defense Directive 2000.12 requires that commanders and managers must address the mission, threat, and other circumstances when planning and designing facilities, both inside and outside of the Continental United States. It is the customers' responsibility to establish the threat. Facility planners and designers are responsible for the planning, designing, and constructing cost effective facilities consistent with the customer designated threat.

POC - NAVFAC Design Charles Mandeville, NAVFAC 15C, DSN 262-4208 comm 757-322-4208, email mandevcm@efdlant.navy.mil

2.15 Computation of Gross Area.

For all gross and net area calculations, use Chapter 4 of MIL-HDBK-1190, Facility Planning and Design Guide. Gross area includes the total area of all floors, including mezzanines, basements, and penthouses as determined by the effective outside dimensions of the building. One-half the area shall be included in the gross area for balconies and porches, covered raised loading platforms, covered loading facilities (either depressed, ground level, or raised), covered but not enclosed passageways or walks, covered and uncovered but open stairs, and covered ramps. Excluded from the gross area are crawl spaces, exterior uncovered loading facilities (either depressed, ground level, or raised) open courtyards, roof overhangs and soffits, uncovered ramps and stoops, utility tunnels, and raceways. Separate central energy plants or utility buildings serving large complexes are not included in the gross module area shown in Table 5A. Separate support buildings should be programmed as a line item on DD Form 1391.

2.16 Barracks Area Requirements

Bachelor Housing Requirements. Planning criteria for Bachelor Housing may be found in the NAVFAC P-80, Category Codes 721-11/12/13/14. Design criteria may be found in Military Handbook 1036A Bachelor Housing, dated 6 August 1997. It is available on the Construction Criteria Base (CCB), and is applicable to Navy and Marines Bachelor Housing.

Table 5 Minimum Standards Rehabilitation Navy

<p style="text-align: center;">MINIMUM STANDARDS OF ACCEPTABLE SPACE AND PRIVACY, EXISTING INVENTORY NAVY</p>

Construction Criteria: for unaccompanied personnel housing approved and constructed, or upgraded by major renovation, under criteria exceeding the standards below, the construction criteria are the minimum standards for the facility.

MINIMUM STANDARDS

Grade	Transient Personnel	Permanent Party Personnel and PCS Students
Civilians (above E6)	250 square feet net living area, private room, private bath	
Officers W-3 - W-5, O3 and above	250 square feet net living area, private room, private bath	400 sq. ft net living area; living room; bedroom, private bath, access to kitchen or officers dining facility receiving appropriated fund support
Officers O1-O2, W1-W2	250 square feet net living area, private room, private bath	250 sq. ft net living area; living room/bedroom, private bath
E7 - E9	250 square feet net living area, private room, bath shared not more than one (1) other.	270 sq. ft net living area; private room, private bath
E5 - E6	135 square feet net living area, private room, bath shared not more than one (1) other.	135 sq. ft net living area; private room, bath shared with not more than one (1) other.
E1 - E4	90 square feet net living area, not more than four (4) to a bay; central bath	90 sq. ft net living area; not more than two (2) to a room, shared bath with not more than four (4) others.
Recruits	72 square feet net living area, open bay central bath	72 sq. ft net living area; open bay; central bath
Civilians (below E6)	Same as E1-E4	Same as E1-E4

The net living area of a private room or module is measured from the inside face of the peripheral wall and includes all such enclosed, unshaped spaces and partitions. The net living area in a shared room comprises the clear furnishable area in the bedroom allocated for furniture, i.e. an individual's bed, desk area, and circulation; it excludes lounges, bathrooms, hallways, closet storage area designed for military mobility, and/or field gear or equivalent. In open bay, net living area is one (1) equal share per person. The open bay comprises all within the peripheral walls.

Table 6 Minimum Standards Rehabilitation Marine Corps

<p style="text-align: center;">MINIMUM STANDARDS OF ACCEPTABLE SPACE AND PRIVACY, EXISTING INVENTORY MARINE CORPS</p>

Construction Criteria: for unaccompanied personnel housing approved and constructed, or upgraded by major renovation, under criteria exceeding the standards below, the construction criteria are the minimum standards for the facility.

MINIMUM STANDARDS

Grade	Transient Personnel	Permanent Party Personnel and PCS Students
Civilians (above E6)	250 square feet net living area, private room, private bath	
Officers W-3 - W-5, 03 and above	250 square feet net living area, private room, private bath	400 sq. ft net living area; living room; bedroom, private bath, access to kitchen or officers dining facility receiving appropriated fund support
Officers 01-02, W1-W2	250 square feet net living area, private room, private bath	250 sq. ft net living area; living room/bedroom, private bath
E6 - E9	250 square feet net living area, private room, bath shared not more than one (1) other.	270 sq. ft net living area; private room; private bath
E5	135 square feet net living area, private room, bath shared not more than one (1) other.	135 sq. ft net living area; private room; bath shared with not more than one (1) other.
E1 - E4	90 square feet net living area, not more than four (4) to a room; except in open bay; central bath	90 sq. ft net living area; not more than two (2) to a room; bath shared with not more than four (4) others
Recruits	72 square feet net living area, open bay central bath	72 sq. ft net living area; open bay; central bath

The net living area of a private room or module is measured from the inside face of the peripheral wall and includes all such enclosed, unshaped spaces and partitions. The net living area in a shared room comprises the clear furnishable area in the bedroom allocated for furniture, i.e. an individual's bed, desk area, and circulation; it excludes lounges, bathrooms, hallways, closet storage area designed for military mobility, and/or field gear or equivalent. In open bay, net living area is one (1) equal share per person. The open bay comprises all within the peripheral walls.

2.16.2 Navy New Construction Standard

The criteria standards for new construction for bachelor enlisted and bachelor officers includes the following design configuration types:

1. (1+1) apartment module plans for permanent party.
2. The Navy will use the (2+2) apartment type for transients. Transients include:
 - A school students
 - Deployed rotational units
 - Ships crews in a commissioning, decommissioning, or overhaul status
 - Students attending school less than 20 weeks
 - Reserves on active duty training (ACTDUTRA)
 - TDY personnel
3. Open Bay design configurations are to include:
 - Recruits
 - Special Forces with special mission needs. Example:
 - Navy Seal Teams and Special Forces)
4. The Navy occasionally houses in accordance with OPNAVINST 11103, Adequacy, Assignment, and Utilization of Bachelor Quarters, but does not build for:
 - Ship board sailors
 - Geographic bachelors
 - Civilians

2.16.3 Marine Corps New Construction Standard

The criteria standards for new construction for bachelor enlisted and bachelor officers includes the following design configuration types:

1. (1+1) apartment module plans for permanent party only where specified.
2. The Secretary of the Navy determined that the collective quality of life for the following would be more enhanced by constructing to a lesser standard providing new quarters to a larger numbers of members. For this exception, the Marine Corps will use the (2+0) module for permanent party.
3. Open Bay design configurations are to include:
 - Recruits
 - Special Forces with special mission needs. Example:
 - Force Reconnaissance Marines and Special Forces)
4. The Marine Corps occasionally houses, but does not build for:
 - Geographic Bachelors
 - Civilians

Table 7 **Construction Standards (Gross & Net Area) Navy & Marines**

New Construction
Construction Standards
NAVY & MARINES

(1+1) MODULES	
Gross Building Area Per Module:	66 sq. meters (710.5 sq. ft.)
Gross Module Area includes:	46 sq. meters (495 sq. ft.)
sleeping/living area (net 11 sq. m. per person)	Note: OSD standards permit a maximum size of 47 sq. m. to accommodate some less efficient floor plans needed for renovation.
Service Area	
Bathroom	
Closets (net 2 sq. m. per person)	
Mechanical, Electrical, Communications space inside the module	
Mechanical/Electrical/Air Conditioning (for sleeping area)	8 square meters (86 sq. ft.) approximately
Administration Core Area	12 square meters (129 sq. ft.) approximately

Note: Up to 4 square meters per module may be added to the building gross area for structures 4 stories or higher, and specific site construction requirements.

Table 7 Con't

(2+2) MODULES (NAVY & MARINES)	
Gross Building Area Per Module:	79 sq. m. (3 stories or less) 83 sq. m. (max for 4 stories or higher)
Gross Module Area includes:	55 sq. meters
sleeping/living area (net 8.35 sq. meters per person 90 SF)	
Service Area	
Bathroom	
Closets (standard size; Less than 2 m.)	
Administration Core: Circulation;	24 square meters (3 stories or less)
Mechanical/Electrical/Air Conditioning	28 square meters (maximum for 4 stories or higher)
(for sleeping area)	

(2+0 MODULES (MARINE CORPS)	
Gross Building Area Per Module:	85 sq. m. (3 stories or less)
Gross Module Area includes:	65 sq. meters
sleeping/living area (net 8.35 sq. meters per person, 90 SF)	
Service Area	
Bathroom	
Closets (standard size; Less than 2 m.)	
Administration Core: Circulation;	26 square meters (3 stories or less)
Mechanical/Electrical/Air Conditioning	
(for sleeping area)	

Table 7 Con't

RECRUITS

Open Bay	6.7 sq. m. (72 sq. ft.)
Net living/sleeping area (per person)	
Building gross area (per Recruit) includes Mech./Elec./Air Conditioning	13 sq. meters (140 sq. ft.)

Note: In the Open Bay area, an .74 meter wide center corridor is included within the gross building area, but excluded from the net area.

2.16.4 Net Living Area

A. Net living area is measured to the inside face of the room walls. Net living area is generally defined as floor area that is not encumbered by overhanging units. Provide a minimum total of 11 sq. m. (118.4 sq. ft.) net living area in each bedroom with 2 sq. m. (21.5 sq. ft.) closets with bath and kitchenette for 46 sq. m. (495 sq. ft.) total for each module. Limited space in the module total requires that variations above the minimums be small.

B. Net living area is measured inside face to wall to inside face of the opposing wall. Areas included in net living area calculations are:

Door swing areas.

Mechanical unit areas.

Bay window areas that are open from floor to ceiling.

C. Areas excluded from net living area calculations are:

Areas not privately controlled by a resident;

Bay windows providing shapes furred to hide through-the-wall equipment or used for storage;

Furred-out columns, pilaster, and mechanical or plumbing chases that extend into the living and bedroom area from the wall plane, if such items extend from floor to ceiling.

Bulk storage not accessible in the apartment.

D. Countless configurations are possible in the design of typical modules, and it is impossible to describe all configurations in this handbook. The method of measuring net living area for intricate designs may require interpretation by Engineering Field Division (EFD) or Engineering Field Activity (EFA) staff.

2.16.5 Gross Module Area

Gross module area is defined as the area within the walls comprising the perimeter of an apartment module. Wall thickness and chase areas within the perimeter walls are included. Gross module area is measured from the centerline of perimeter walls

shared with interior corridors, common chases, or other rooms. It is measured to the outside face of exterior walls. Corner rooms with two exterior walls shall have the same interior dimensions as other rooms even though, technically, the gross module area for these corner rooms is slightly more than for other rooms.

2.16.5 Gross Building Area

A. Gross building area is measured to the outside face of exterior enclosure walls. Do not include normal roof overhangs, balconies of less than 2 square meters, and mechanical equipment balconies in gross building area calculations. Exterior covered areas such as balconies over 2 square meters count as half scope, and are measured from the face of the enclosure wall to the edge of the covered area. Stairs and elevator shafts count as half scope per floor that they serve. Refer to NAVFAC P-80, Facility Planning Factor Criteria for Navy and Marine Corps Shore Installations for more information on scope calculation. The gross building area for bachelor quarters shall not exceed 66 sq. m. per apartment module except for specifically justified space for mid-rise buildings not to exceed an additional 4 sq. m. (43 sq. ft.) per apartment module. This limitation emphasizes the need to efficiently design the apartment module and to provide more area outside the modules for recreation, community, and support functions. Apartment modules with a gross area of the recommended 46 sq. m. allow 20 to 24 sq. m. (215 to 258 sq. ft.) to apply to areas outside the module (66 or 70 sq. m. minus 46 sq. m.), whereas larger apartment modules, while allowed, limit the size and potentially the quality of areas providing recreation, community, and support functions.

B. Section 2.16.5 lists suggested functional features and sizes associated with core areas. This table is based on a conceptual bachelor quarters of 136 modules. There are no maximum allowable areas for the core spaces if the maximum gross area for the building or complex of 66 sq. m. per module is not exceeded. It is difficult to accommodate all of the suggested core spaces at their recommended sizes in many bachelor quarters, even if the module area is held at 46 sq. m. Local commands, therefore, must prioritize these optional spaces and their sizes based on individual project needs.

PART 3: DD Form 1391 Plus Development/PCE

3.1 Purpose.

The DD 1391 Plus package is intended to provide "just in time" and "just enough" documentation to meet the needs of budget decision makers and the project team.

3.1.1 Parts of a DD Form 1391 Plus Package

Each DD 1391 Plus package will consist of a DD 1391 form and a narrative addressing the following five items:

- **Requirement**
- **Scope**
- **Cost**
- **Alternatives considered to meet requirement (including NEPA considerations)**
- **"Doability" (in the year requested)**
-

The "Requirement" element would identify why this project is required, how does this project help to meet the mission of the activity.

The "Scope" is a narrative discussion of how this scope was derived from the requirement.

The "Cost" is based on GUP (DoD Guidance Unit Pricing) or other guides, with EFD cost engineers input and includes all available knowledge of the site, any clean-up necessary, NEPA mitigation, utilities, etc. Guidance unit prices must be adjusted to meet the scope and FY of the specific project.

The "Alternatives considered to meet the requirements" section deals with the need to instill, at a very early stage in the project development, a need to assess the various alternatives to the proposed action. This would include a discussion of various alternatives to the project such as leasing, contracting out, public/private ventures, use of existing available assets, renovation of existing assets, etc. and the reasons why each was not chosen. This is not intended as a formal economic analysis, but as a means to get the preparer to put some thought into the consideration of alternatives to the project. A full economic analysis will be required with the "PCE", and may be required for certain 1391 Plus.

This section is also where the preparer would provide some narrative with respect to the alternatives considered from an environmental planning perspective. Briefly evaluating different alternatives to the proposed action and the impact on the environment for that alternative. The preparer would indicate the anticipated level of environmental documentation required for the project (Categorical Exclusion, Environmental Assessment, Environmental Impact Statement).

The "Doability" section deals with whether this project can begin construction in the program year indicated. Issues such as preparation of environmental documentation, required permits, delivery dates of equipment associated with the project, complexity of a project and its impact on the anticipated design schedule, etc. need to be discussed here.

3.1.2 Elements

3.1.2.1 Discussion of the five elements.

Requirement, Scope, Cost, Alternatives, and Doability are included in the various blocks of the DD 1391.

3.1.2.2 1391 Blocks 1 through 12 :

Block 1	Component
Block 2	Date
Block 3	Installation & Location/UIC
Block 4	Project Title
Block 5	Program Element (Left blank)
Block 6	Category Code
Block 7	Project Number
Block 8	Project Cost (\$000)
Block 9	Item Cost Estimate
Block 10	Description of Proposed Construction
Block 11	Requirement including
	a. A narrative discussion how this project scope was derived.
	b. Requirement description - either justification for new mission, justification for expanded / changed mission, justification for Capital Investment, or justification for mission impact Requirement must include need date.
	c. Current Situation description.

Block 12

d. Impact if not Provided - Including impact if not provided by the need date.
e. Additional info - Including how this project fits the activity's long term vision, the alternatives to construction considered (lease, renovation, addition, alteration, use of other existing facilities, etc.), and the rationale for selecting new construction as the best alternative to satisfy the requirement.
Environmental Planning/NEPA/Site Approval including:
a. Anticipated level of NEPA (Catex, EA, EIS) and anticipated completion date.
b. Soils & Foundations from historical records.
c. Contamination studies from historical records.
d. Issues associated with explosives safety. Air Installations Compatible Use Zones (AICUZ), Electromagnetic Radiation (EMR) safety, wetlands, traffic flow, operational space, endangered species, sensitive habitat, area specific air quality status, cultural/archaeological resources, etc.
Construction Permits - whether required, if so, when.
Operational Permits - whether required, if so, when.
Equipment from Other Appropriations

3.2 Instructions for DD Form 1391.

The following instructions correspond to the circled numbers shown in Figure 1.

1. Date shall be the day submitted. Dates must be revised if a resubmittal is made.
2. Enter the five-digit category code number from NAVFAC P-72, Department of the Navy Facility Category Codes to identify the primary facility. In cases of multi-use facilities, enter the category code which represents the largest cost of the project.
3. Block 8 - "Project Cost" shall be the same as the "TOTAL REQUEST" in block 9. Escalate to mid-point of construction. Assume a construction start of 1 April of the appropriation year.

MIL-HDBK-1010B

4. The Area Cost Factors (ACF) for stateside areas are shown in Appendix 8.2. The Area Cost Factors and the corresponding Foreign Exchange Rates for various overseas locations are shown in Appendix 8.3.
5. The line items shown are generally suitable for most projects. They should be tailored to suit the individual project - discuss this with the EFD/EFA Cost Engineering Organization. The cost figures in parentheses should add to equal "PRIMARY FACILITY" (Project Title) cost or "SUPPORTING FACILITIES" cost. Costs under "Primary Facility, Building" must equal those shown under Guidance Cost Analysis for applicable category code. Include a list of the major use areas for multi-use facilities under the Primary Facility. Show the unit cost as applicable to the total size of the Primary Facility. For costs other than building, refer to Section 3.4 Primary Facility and Figure 3.
6. See Part 2.2 for guidance on development of costs for preparing Technical Operating Manuals.
7. Contingency will be 5 percent for all projects.
8. Use 6.0 percent SIOH (Supervision, Inspection and Overhead) for all stateside projects and 6.5 for all overseas projects unless directed otherwise. Operation and Maintenance projects require 8% SIOH.
9. Must agree with total for all other categories of equipment on collateral equipment list. If not available, type "(LIST NOT AVAILABLE)" in place of "(NON-ADD)." Normally attached equipment is MCON funded and is included in the guidance unit cost. Enclose cost figures in parentheses.
10. Complete Guidance Cost Analysis. This computation will summarize those costs shown on the primary unit cost development sheet without additional functional features or other added features. If a building is made up of multiple category code areas, list all, do not summarize here.
11. Description of Proposed Construction.
12. Note: Round unit costs to nearest dollar except under \$20.00. Round extensions upward to nearest \$10,000 (10K). Round contingencies and SIOH upward to nearest \$10,000 (10K). Round unit costs under \$20.00 to nearest \$0.10. Variations may be used for extremely large quantities.
13. Note: If the project includes more than one structure or location, address each in a separate paragraph in block 10 and separately in block 9. Describe special building features that have a large cost impact.
14. NOTE: Complete the Primary Facility Cost Development and Budget Estimate Summary Sheet and Back-Up Estimate, as shown in Figures 2, 3, 4, 5 and 6.

MIL-HDBK-1010B

1. COMPONENT NAVY	FY 1999	MILITARY CONSTRUCTION PROJECT DATA		2. DATE: 1 May 1997	1			
3. INSTALLATION AND LOCATION Naval Air Station, Washington,			4. PROJECT TITLE Automotive Vehicle Maintenance					
5. PROGRAM ELEMENT	6. CAT. CODE 214-20	7. PROJECT NUMBER P-999	8. PROJECT COST (\$000) 7,870					
9. COST ESTIMATES								
A.C.F. F.E.R.	1.05 n/a	DATE ESCALATED TO: 1 OCT 99	U/M	QUANTITY	UNIT COST	COST (\$000)		
Automotive Vehicle Maintenance Shop						5,020		
Building			M2	3,716	1260.00 (4,690)		
Built-In Equipment			LS	1	123000.00 (130)		
Loading Dock			M2	150	450.00 (70)		
Technical Operating Manuals			LS	1	70000.00 (70)		
Information Systems			LS	1	60000.00 (60)		
SUPPORTING FACILITIES			LS			2,040		
SPECIAL FOUNDATION FEATURES			LS			(260)		
SITE PREPARATION			LS			(200)		
SITE IMPROVEMENTS			LS			(580)		
SITE CIVIL / MECHANICAL UTILITIES			LS			(660)		
SITE ELECTRICAL UTILITIES			LS			(340)		
SUBTOTAL						7,060		
CONTINGENCIES (5%)						360		
TOTAL CONTRACT COST						7,420		
SUPERVISION, INSPECTION, OVERHEAD (6%)						450		
TOTAL REQUEST						7,870		
EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS (NON ADD)								
Guidance Cost Analysis								
Category Code	U/M	Guidance Cost	Guidance Size	Project Scope	Size Factor	Area Cost Factor	Escalation	Adjusted Unit Cost
214-20	M2	1238	2,800	3,716	0.97	1.05	1.00	1260
10. DESCRIPTION OF PROPOSED CONSTRUCTION								
11								
Meets Military Requirements				Major Claimant Endorsement				
C.O Activity				M.C. Representative				
Signature / Date				Signature / Date				
Project Validation				Project Cost Certification				
LANTOPS 09p				LANTOPS 04				
Signature / Date				Signature / Date				

DD1391

Figure 1: Form DD1391 (numbered)

3.3 Instructions for Budget Estimate Summary Sheet

The following instructions correspond to the circled numbers shown in Figure 2.

1. Show project Title in conformance with NAVFAC P-72, (where applicable) Department of the Navy Facility Category Codes.
2. Enter the area cost factor and the official foreign exchange rate.
3. Escalate to midpoint of construction. Assume a construction start of 1 April of the appropriation year. NAVFAC Escalation chart will be used for all projects. (See below.) DoD Guidance prices include escalation to 1 October of the program FY. Adjustment may be required.
4. Enter unit of measure.
5. Quantities applicable to the primary and supporting facilities. For supporting facilities use the Work Breakdown Structure. For primary facilities, use gross building area.
6. Unit cost for all line items shown based upon the building gross area or systems quantity. Round to nearest dollar when \$20.00 or over. Under \$20.00 to nearest \$00.10. Variations allowed for extremely large quantities.
7. Round cost upward to nearest \$10,000 for Primary Facility. Round Supporting Facility extensions up to nearest \$1,000. Round "Cost Transferred to 1391" up to nearest \$10,000.
8. Contingency will be 5 percent for all projects.
9. Enter 6.0 percent Supervision, Inspection and Overhead (SIOH) for stateside projects and 6.5 percent for foreign projects. O & M projects use 8%.
10. Note: If the summary sheet is for one building (or any portion of a project) so indicate. In that case, provide one summary sheet for totals transferred from sub-summary sheets.

BUDGET ESTIMATE SUMMARY SHEET					
(1) P. NO. : P-999		FY 99			
TITLE: Automotive Vehicle Maintenance Shop		DATE OF ESTIMATE: 1 May 1997			
LOCATION: Naval Air Station, Washington, DC		DESIGN STATUS (%): 1391 Plus			
PREPARED BY: RICH & ASSOCIATES		DATE ESCALATED TO: 1 OCT 99			
(2) A.C.F.:1.05	F.E.R.: n/a	ESCALATION FACTOR 2 %			
	UM (4)	QTY (5)	UNIT COST (6)	ESCALATED COST (7) ROUNDED	COST TRANSFERED TO 1391
Automotive Vehicle Maintenance					5,020
Building	M2	3,716	1260.00	4,690,000	4,690
Built-In Equipment	LS	1	123000.00	130,000	130
Loading Dock	M2	150	450.00	68,000	70
Tech. Oper. Manuals	LS	1	69000.00	69,000	70
Information Systems	LS	1	56000.00	56,000	60
SUPPORTING FACILITIES					2,040
01 SPECIAL FOUNDATION FEATURES					260
02 Special Foundation Conditions	M	4,000	64.00	256,000	
17 SITE PREPARATION					200
01 Site Clearing	HA	3	12827.00	38,000	
02 Site Demolition	LS	1	25500.00	26,000	
03 Site Earthwork	M3	15,000	8.70	131,000	
18 SITE IMPROVEMENTS					580
01 Roadways	M3	3,000	58.00	174,000	
02 Parking Lots	M2	6,000	40.00	240,000	
03 Walks, Steps, Ramps, Terraces	M2	800	43.00	34,000	
04 Site Development	M	1,200	68.00	82,000	
05 Landscaping	M2	8,000	6.00	48,000	
19 SITE CIVIL / MECHANICAL UTILITIES					660
01 Water Supply	M	1,800	59.00	106,000	
02 Sanitary Sewers	M	800	49.00	40,000	
03 Storm Sewers	M	1,100	130.00	143,000	
05 Heat Distribution	M	500	724.00	362,000	
20 SITE ELECTRICAL UTILITIES					340
01 Substation	KVA	500	46.00	23,000	
02 Electrical Distribution	M	400	470.00	188,000	
03 Exterior Lighting	EA	25	3000.00	75,000	
04 Communications and Alarm	M	500	96.00	48,000	
(8) TOTAL CONTRACT COST W/O CONTINGENCY					7,060
(9) CONTINGENCY (5%)					360
(9) TOTAL CONTRACT COST					7,420
(9) SIOH (6%)					450
(10) TOTAL BUDGET COST					7,870

Figure 2: Budget Estimate Summary Sheet (numbered)

3.4 Instructions for Primary Facility Unit Cost Development.

See Figure 3.

3.4.1 Guidance Cost Priorities:

- (1) NAVFAC Primary Facility Guidance Costs, Appendix 8.1.
- (2) Guidance costs obtained from historical data of comparable projects (cost must be obtained from or verified by EFD Cost Engineering).

3.4.2 Guidance cost Adjustment

The guidance cost must be adjusted to allow for differences in size (reference 7.14), area cost factors, and escalation. The area cost factors are listed in Appendices 8.2 and 8.3; escalation is shown in Appendix 8.4.

3.4.3 Cost for Additional Work

The guidance cost represents a typical project, including all normal equipment. Cost for additional work must be added when required.

Built-In Equipment is items that are included in the scope as defined by the area on the 1391 and are not included in the Guidance Costs. Back-up for these costs must be shown. Examples are: shielding, Uninterruptible Power Systems (UPS), retrieval equipment racks for warehouses, very high walls, emergency generators, raised floors, and asbestos removal.

Other additional features are items not included in the 1391 Scope (square foot) or are required to be identified separately on the 1391. Examples are: OMSI over \$50,000, loading docks not included in the 1391 area, information systems (telephone cabling and equipment within the 5 ft line).

3.4.4 Gross area calculations

Gross area calculations (Par. 2.15 or 2.16 for barracks) require certain areas to be taken at zero or one-half the actual area. These excluded areas must be included in the project cost. This can be done by showing the actual cost as an other added features on the Primary Facility Unit Cost Development Sheet.

3.4.5 Adjusted Unit Cost

The adjusted unit cost (u/c) for each functional feature is obtained by dividing the total cost of each feature by the total size of the proposed facility. (Include all multi-use areas.)

3.4.6 Size Adjustment Factor

The size adjustment factor is derived from Reference 7.13.

3.4.7 Escalation Factors

The escalation factors are given in Appendix 8.4.

3.4.8 Area Cost Factors

The area cost factors are given in Appendices 8.2 or 8.3.

PRIMARY FACILITY UNIT COST DEVELOPMENT

TITLE: Automotive Vehicle Maintenance Shop P#: 999

LOCATION: Naval Air Station, Washington, DC DATE: 1 May 1997

PREPARED BY: Joe Smith, PWC PH#: 000-000-0000

	CAT CODE	SIZE M2	ACF	DATE mo/yr
PROPOSED FACILITY	214-20	3,716	1.05	10/99
GUIDANCE FACILITY	214-20	2,800	1.00	10/99

HISTORICAL GUIDANCE SOURCE: Primary Facility Guidance Cost

HISTORICAL GUIDANCE UNIT COST: \$1,238.00

HISTORICAL UNIT COST		SIZE FACTOR		AREA COST FACTOR		ESCALATION FACTOR	
\$,2381.00	X	0.97	X	1.05	X	1.00	= 1260.00

SPECIFIC FEATURES OF ADDITIONAL COST**BUILT-IN EQUIPMENT**

	QUANTITY	UOM	UNIT COST	TOTAL COST
Foundation Wall	300.00	M2	110.00	33,000
Grade Beams	400.00	M	150.00	60,000
Bridge Crane	1.00	TN	30000.00	30,000
SUBTOTAL BUILT-IN EQUIPMENT				123,000
OTHER ADDED FEATURES				
Loading Dock	150.00	M2	450.00	67,500
Technical Operating Manuals	4600000.00	\$	0.015	69,000
Information Systems	3716.00	M2	15.00	55,740
SUBTOTAL OTHER ADDED FEATURES				192,240

Figure 3: Primary Facility Unit Cost Development

3.5 Instructions for Supporting Facilities Cost Development.

(See Figure 4,5 &6) Supporting facilities include all construction items outside the building's 5-foot line and all special foundation features of significant cost unique to the building. All supporting facility items should be included under one of the following major categories. (Each sub-item included under these major categories shall have a separate line item entry on the Budget Estimate Summary Sheet. Refer to par. 7.15 for identification by Work Breakdown Structure (WBS) of supporting facilities.)

3.5.1 Special Foundation Features (01.02)

Include special foundation requirements (e.g., piling, drilled piers, vibroflotation, dewatering, special excavation, shoring, etc.).

3.5.2 Site Preparation (17.XX).

Include site clearing, site demolition and relocation, site earthwork, site clean up, and other site preparation work. Include minor demolition for utility installation with associated utility. Show building number of structure to be demolished in Para 10 of DD Form 1391.

3.5.3 Site Improvements (18.XX).

Include roadways, parking lots, walks, steps, ramps and terraces, fencing, retaining walls, exterior furnishings. Security structures, signs, pools, playing fields, lined collection ponds, topsoil and seed, planting, irrigation systems, bridges, railroad work and other site improvements.

3.5.4 Site Civil/Mechanical Utilities (19.XX).

Include water distribution, sanitary sewers, storm sewers, industrial waste, heat distribution, cooling distribution, gas systems, fuel distribution, and other civil and mechanical utilities.

3.5.5 Site Electrical Utilities (20.XX).

Include substations, exterior electrical distribution, exterior lighting, exterior communications and alarm systems, exterior security sensors and TV monitoring systems, Cathodic protection and other electrical utilities.

3.5.6 Hazardous Removal (30.XX).

Discussions with a contractor specializing in Hazardous Removal work or with Cost Engineering is encouraged.

3.5.7 Supporting Facilities - Cost.

Each supporting facility system must be priced separately. When an item from paragraphs 3.5.1 thru 3.5.5 is very large, it may be desirable to separately identify this item on the 1391. Each project should be evaluated on its own merit.

3.5.8 Pricing Sources.

Supporting facility costs should be estimated using the following pricing sources:

- a) Supporting facility guidance cost reference provides composite in-place cost for typical assemblies. See Appendix 8.5.
- b) Assembly cost obtained from recently bid local projects. This is considered a reliable source.
- c) Traces Unit Price Book (TUPB).

MIL-HDBK-1010B

BACK UP ESTIMATE							
TITLE:	AUTOMOTIVE VEHICLE MAINTENANCE				DATE: 22 Oct 1996		
LOCATION:	NAVAL AIR STATION, WASHINGTON, DC				P#: 999		
FILE:	BU-SAMPLE				UNIT	SYSTEM	SYSTEM
	QTY	U/M	COST	COST	UNIT COST	TOTAL COST	
SUPPORTING FACILITIES							
01	SPECIAL FOUNDATION CONDITIONS						
02	SPECIAL FOUNDATION						
	300mm p/c p/c concrete piling	4000	M	61.73	246,920		
	Pile test	2	EA	5000.00	10,000		
		4000	M			64.23	256,920
17	SITE PREPARATION						
01	SITE CLEARING						
	Clearing and grubbing	3	HA	12827.00	38,481		
		3	HA			12827.00	38,481
02	SITE						
	Remove concrete paving, 200mm	1,200	M2	11.25	13,500		
	Remove underground tank,	2	EA	6000.00	12,000		
	19,000 Liter (hazardous materials)	1	LS			25500.00	25,500
03	SITE EARTHWORK						
	Strip site	2,000	M3	2.00	4,000		
	Earthwork	10,000	M3	4.00	40,000		
	Borrow	3,000	M3	23.99	71,970		
	Erosion control	15	HA	1000.00	15,000		
		15,000	M3			8.73	130,970
18	SITE IMPROVEMENTS						
01	ROADWAYS						
	250mm Concrete access road	3,000	M3	49.80	149,400		
	150mm Stone base	3,000	M3	7.86	23,580		
		3,000	M3			57.66	172,980
02	PARKING LOT						
	50mm Bituminous surface	6,000	M2	7.91	47,460		
	75mm Bituminous base	6,000	M2	11.40	68,400		
	250mm Stone base	6,000	M2	13.00	78,000		
	Curb and gutter	1,000	M	46.20	46,200		
		6,000	M2			40.01	240,060

Figure 4: Back Up Estimate Sheet 1

MIL-HDBK-1010B

BACK UP ESTIMATE

TITLE:	AUTOMOTIVE VEHICLE MAINTENANCE				DATE: 22 Oct 1996		
LOCATION:	NAVAL AIR STATION, WASHINGTON, DC				P#: 999		
FILE:	BU-SAMPLE						
		QTY	U/M	UNIT COST	SYSTEM COST	SYSTEM UNIT COST	SYSTEM TOTAL COST
03	WALKS, STEPS, RAMPS,						
	100mm Concrete walk	800	M2	37.14	29,712		
	100mm Stone base	800	M2	5.25	4,200		
		800	M2			42.39	33,912
04	SITE						
	2.4m Chain link fence	1,200	M	65.85	79,020		
	Gates	10	M	268.00	2,680		
		1,200	M			68.08	81,700
05	LANDSCAPING						
	Place topsoil	800	M3	2.00	1,600		
	Seeding	8,000	M2	1.92	15,360		
	Planting allowance	1	LS	30000.00	30,000		
		8,000	M2			5.87	46,960
19	SITE CIVIL / MECHANICAL UTILITIES						
01	WATER SUPPLY						
	150mm Water line	800	M	32.54	26,032		
	200mm Water line	1,000	M	55.49	55,490		
	Fire hydrant	4	EA	2843.00	11,372		
	Valves and fittings allowance	1	LS	5000.00	5,000		
	Connect to existing	2	EA	2560.00	5,120		
	Remove and replace paving	100	M2	35.17	3,517		
		1,800	M			59.18	106,531
02	SANITARY SEWERS						
	150mm Sanitary line	800	M	29.69	23,752		
	Manholes, 8 ft deep	8	EA	1979.00	15,832		
		800	M			49.48	39,584
03	STORM SEWERS						
	300mm Reinf concrete pipe	600	M	57.27	34,362		
	600mm Reinf concrete pipe	500	M	142.00	71,000		
	Catch basin	16	EA	2064.00	33,024		
	Flared end sections	8	EA	600.00	4,800		
		1,100	M			130.17	143,186

Figure 5: Back Up Estimate Sheet 2

MIL-HDBK-1010B

BACK UP ESTIMATE							
TITLE: AUTOMOTIVE VEHICLE MAINTENANCE SHOP				DATE: 22 Oct 1996			
LOCATION: NAVAL AIR STATION, WASHINGTON, DC				P#: 999			
FILE: BU-SAMPLE	QTY	U/M	UNIT COST	SYSTEM COST	SYSTEM UNIT COST	SYSTEM TOTAL COST	
05 HEAT DISTRIBUTION							
75mm Supply 50mm return underground	500	M	650.00	325,000			
Manholes, 8 ft deep	4	EA	8000.00	32,000			
Connect to existing	1	LS	5000.00	5,000			
	500	M			724.00	362,000	
20 SITE ELECTRICAL UTILITIES							
01 SUBSTATION							
Pad mounted 500 KVA station	1	EA	23105.00	23,105			
	500	KVA			46.21	23,105	
02 ELECTRICAL DISTRIBUTION							
4 Way 150mm CE duct PVC	350	M	174.00	60,900			
4 1/c 500mcm USE secondary	750	M	127.00	95,250			
Terminations	8	EA	666.00	5,328			
3 1/c #4/0 primary 15KV	50	M	110.00	5,500			
Connect to existing	1	LS	3000.00	3,000			
Manholes	2	EA	8000.00	16,000			
Remove and replace paving	50	M2	35.17	1,759			
	400	M			469.34	187,737	
03 EXTERIOR LIGHTING							
10m Pole with light	25	EA	3000.00	75,000			
	25	EA			3000.00	75,000	
04 COMMUNICATIONS AND ALARM							
2 W 100mm CE duct PVC	500	M	54.91	27,455			
Telephone cable	500	M	5.00	2,500			
Manhole	3	EA	6000.00	18,000			
	500	M			95.91	47,955	
SUPPORTING FACILITY COSTS TOTAL						2,012,581	
<p>*** Note: Level of detail shown is considered to be sufficient to provide a reasonable estimate at this phase of programming. Consolidation of some items may be necessary in some cases. Allow for connections, miscellaneous fittings, and valves in utility lines. Consider small quantities and adjust pricing upward. Do not be over optimistic, the detailed scope of work will usually grow, not decrease. Where scope is not fully developed, adjust pricing upward.</p>							

Figure 6: Back Up Estimate Sheet 3

3.6 Proposed Site Plan.

In order to reasonably estimate the supporting facility requirements, the proposed site should be investigated and station utility maps reviewed. It is suggested that a scaled, single line site plan be developed for the project. For most projects, this site plan can be made on an 8-1/2 by 11-inch sheet and should be attached to the estimate. The site plan should show most, if not all, of the following:

- a) Existing elevations
- b) Proposed building(s) and structure(s)
- c) Finish floor elevation
- d) Existing mechanical and electrical utility runs
- e) New civil, mechanical, and electrical services to the facility.
- f) Paving
- g) Demolition

Part 4: Parametric Building Models for Windows (PBMW)

4.1 Purpose

The purpose of the Parametric Building Models for Windows (PBMW) system is to enable the program manager or project estimator to effectively estimate and manage costs during the most critical phases of the facility acquisition process: planning and programming. The underlying concept of the models is: predefined relationships can be developed to link basic facility parameters (function, gross floor area, number of floors, heating load, electric load, etc.) to detailed engineering quantities.

4.1.1 Caution

The models have been prepared from past projects and Air Force Models (Tri-service). Recent criteria changes are not included. Appropriate modifications must be made.

4.2 Minimum System Requirements

4.2.1 Hardware

- An IBM Personal Computer, or 100 percent compatible, capable of running Microsoft Windows.
- A VGA resolution, or above, color monitor.
- A printer (optional, but recommended).
- A Microsoft or 100% Microsoft Windows compatible mouse.
- 4 megabytes of available RAM (8 megabytes or greater recommended). For Win 95, 16 megabytes is recommended.
- Hard drive or network space as follows:

PBMW system files	8087 K
Print Time Lookup Tables	557 K
Building - New Models	74946 K
Help Files	191 K
Templates	1757 K
Sitework Models	7812 K
Model Libraries	33758 K
Report Library	683 K
Lookup Tables	1953 K
TOTAL	129747 K

4.2.2 Software

- Microsoft DOS version 5.0 or higher.
- Microsoft Windows or Microsoft Windows for Workgroups version 3.1 or higher, running in enhanced mode, or Windows 95.

4.2.3 Network

- Any Microsoft Windows or Windows 95 compatible network.

4.3 Methodology

The PBMW program uses an estimating process known as parametric estimating. This is a method of estimating costs based on parameters such as project requirements, characteristics, and conceptual design information.

These costs can be established by comparative/cost estimating relationships or quantity models. Comparative/cost estimating relationships include historic cost databases, historic project technical information (size, type of project, where built, duration, etc.). These costs are then normalized by using location and escalation factors to obtain project specific costs. Also included are statistical methods such as linear regression and projection which can be used to establish costs.

The PBMW uses the quantity method of parametric estimating. This method involves using algorithms and default parameter information to establish quantities of work assemblies and then links these quantities to a current price database. The system also uses location modifiers, i.e., seismic, weather, and climate zones, to make the design and estimate site specific.

The PBMW model process will define and quantify facility components along functional lines (substructure, superstructure, interior construction, mechanical systems, etc.). The quantities are then priced using composite assemblies. Composite assemblies are an aggregated cost of one or more detailed line items. The detail costs line items that compromise the assemblies are primarily derived from TRACES National Unit Price Book (UPB) data. The database contains labor, material and equipment costs for approximately 25,000 construction items.

To provide maximum flexibility, the models are organized using the TRACES Generic Work Breakdown Structure (WBS). The TRACES Generic WBS is a modified version of the UNIFORMAT WBS with predefined knowledge-based relationships at each level that are unique to TRACES. The structure ensures the generation of complete cost estimates and allows the user to provide more detailed criteria,

when available, at any level of the WBS. The TRACES Generic WBS outline is included in the Appendix, 7.14 and 7.15.

4.4 The PBMW Modeling Process

The PBMW modeling process is a straight-forward procedure used to effectively estimate and manage costs of various military buildings. The PBMW system is made up of many different models; however, the modeling process is basically the same for all models. The models are capable of developing cost estimates for a given building at any point in the design process. The cost estimate will reflect the actual design of the facility based on the level of design definition entered at the time the estimate is prepared. The more specific project data entered, the more accurate the estimate.

Estimates can be established by accepting all model defaults and assembly quantities, or an estimate can be built to reflect the unique conditions and design of a project if it is different from the model default. A building model template should not be altered, so that each time you select a model template from the selection of models it will be the same. However, a model template can be used as the basic building block for an estimate. The estimate then becomes a unique combination of elements which may no longer resemble the model template used to build the estimate. By adding and deleting Functional Space Areas (FSAs) and assemblies, and editing assembly quantities, an estimate can be generated for any type of building facility.

There are currently 68 parametric building models available. Each model reflects a different building design, which was based on actual completed construction projects. The model estimates were developed by preparing Quantity Take-Offs (QTO) from the completed design drawings and specifications. The list of FSAs and assemblies and assembly quantities are directly related to the original quantities by proportioning the scope of the new facility to the scope of the model facility. This produces a list of FSAs and assemblies that include all material, labor, and equipment required to construct a facility.

The only information that is required to complete an estimate is the Total Facility Scope (total square feet of the building), the facility type, start date of construction, and the location. No other information is required to process a direct cost estimate. The system will select default values for all parameter and then calculate quantities and cost based on the information provided. However, the more information that is known about a building, the more accurate the estimate will be. This is accomplished by

editing parameters, quantities, and FSAs to customize the estimate to fit the description and scope of the facility. **The best way to begin the process of customizing an estimate is by selecting the model that is a FSA combination most closely resembling your facility. This will give you a good base to begin building an estimate.** (Get the best results, using a model close to the size of the new project.)

4.5 Definitions

- Project - A project is the complete scope of work that will be included in a construction contract. The project is the highest level in the estimate hierarchy in the PBMW system. A project includes one or more facilities that, when combined, form a complete project or a single contract. This will typically be synonymous to a current working estimate (CWE). NOTE: Current working estimate is contract cost. It does not include contingencies or SIOH.
- Facility - A facility is a component of a project. A facility can be a building or a site work project. There can be one or more facilities in a project. Buildings are typically Primary Facilities. Sitework, utilities, and other special "non-building" items are usually Supporting Facilities.
- Building Area - The building area of a major building structure is defined as the sum of the areas of the floors of the facility, including basements, mezzanines, intermediate floored tiers, and all penthouses, measured from the outside face to outside face of exterior walls, or from the center line of common walls separating adjoining functional areas. This criteria is applied to every building model facility type.
- Total Facility Scope - The Total Facility Scope is the total of all facility full scope areas and half scope areas of the facility. Total Facility Scope is the same quantity as the Facility Quantity on the Form DD1391. In some cases not all areas are included. These are usually exterior items such as loading docks.
- Full Scope Area - A Full Scope Area of a building is any area that is completely enclosed by walls and roof. The total square footage is the gross floor area of a full scope area.
- Half Scope Area - Half Scope Areas are areas such a covered loading docks, covered walkways, and entries.

Only one half of the actual gross square footage is used to calculate Total Facility Scope of a Half Scope Area.

- Building Gross Floor Area - The building Gross Floor Area (GFA) is composed of functional spaces (FSAs). The FSAs are measured from center line to center line of enclosing walls, except at exterior walls where the measurement is taken to the outside face of the exterior wall. The square foot sum of the FSAs must equal the building GFA.
- Functional Space Area (FSA) - FSAs are predefined space types which make up the facility. These areas include specific functions, the circulation within that area required for its operation, and the public areas committed to servicing only that area function. These areas include duct and pipe chases but do not include mechanical/electrical areas or the space dedicated for maintenance of this type of equipment.
-

4.6 Rules of Measurement

The following Rules of Measurement are applicable when using the PBMW system:

- No deduction in floor area should be taken for openings such as stairs, elevators, service shafts, duct shafts, escalators, or other vertical conveying elements.
- Areas such as auditoriums, foyers, and gymnasiums that extend vertically through two or more floors should be included at one level only, the main floor level.
- Covered exterior areas such as porches, covered walkways, balconies, canopies, covered loading docks, etc., are included as full scope areas for model estimating purposes. However, these areas are counted as half-scope (one half of their actual square footage area) for total facility scope reporting.
- Slabs, decks, and floors that are not covered by a roof or ceiling should not be included in the building area. The building area does not include exterior unroofed terraces, steps, chimneys, roof overhangs, etc.
- Interstitial space containing equipment that would otherwise require dedicated floor space, including the appropriate maintenance area, should be included at its full scope building area. Interstitial space that contains only structure and service systems should not be included.
- Sloping or stepped floors should be measured flat on a horizontal plane.
- The building models only calculate quantities and cost for items within five feet of the exterior walls of the building.

- Lengths of roads and utility lines are measured in lineal feet. Thickness of pavement, subgrades, and bases are measured in inches. Depth of trenches are measured in vertical feet.
- Soil and aggregate quantities are measured as in-place cubic yards, with the exception of excavation models which are stated as bank cubic yards and loose cubic yards where indicated.

4.7 Traces Generic Work Breakdown Structure

The TRACES Generic Work Breakdown Structure (WBS) is a tree-type structure of functional systems used to classify the facility on a level-by-level basis. The TRACES WBS is the organizing frame work of each model and uses a top-down approach. The TRACES WBS consists of four levels on increasing detail. Each succeeding level in the structure is composed of unique categories that link to one of the preceding level categories. The following table shows the various levels in the TRACES WBS and gives a brief description and example of each level:

<u>LEVEL</u>	<u>DESCRIPTION AND EXAMPLES</u>
System	Divides the Facility into its fundamental components. Examples: Substructure, Superstructure, Mechanical, and Electrical systems.
Subsystem	Subdivides each System into its separate constituents. Examples: Superstructure is comprised of floor, roof, and stair construction subsystems.
Assembly Category	Separates each Subsystem into distinguishable parts. Example: Floor construction is comprised of suspended basement floors, upper floors, balconies, and ramps.
Assembly	Subdivides each Assembly Category into specific building elements. Example: Upper floor assemblies include a 24" wide cast-in-place concrete pan joist system, 18" precast double tee system, series H bar joists with steel frame, etc.

A complete list and description of the TRACES Generic WBS is included in the Appendices 7.14 and 7.15.

4.8 The Project Tree Organization

All models basically have the same Project Tree organization or hierarchy. The Project Tree organization dictates the process and viewing of cost and data in the Project. There are two major hierarchy levels in a Project. The Project Level (root level) is the highest level where the Project Total Cost is summarized and viewed. The Child Levels (or branches) are The Primary Facilities, Supporting Facilities, and the Modifiers.

PROJECT TREE

Project Estimate Name
 Primary Facilities
 Supporting Facilities
 Modifiers

4.8.1 Primary Facilities

The Primary Facilities Level is the Level in the Project Tree where one or several Primary Facilities are located. The Primary Facilities Level has a child level (or branch) for each Facility Type i.e. General Administration Facility etc. Each Facility Type has child levels of Building Shell and Functional Space Areas,

PRIMARY FACILITIES

PROJECT ESTIMATE NAME
 PRIMARY FACILITY
 GENERAL ADMINISTRATION FACILITY
 BUILDING SHELL
 FUNCTIONAL SPACE AREAS
 SUPPORTING FACILITIES
 MODIFIERS

4.8.1.1 Building Shell

The organization of the Building Shell is by the TRACES Generic WBS, i.e. 01 Substructure, 02 Superstructure, etc. The costs included in the Building Shell are for items that comprise the framework, enclosure, and support Mechanical and Electrical Systems for the building, i.e. Foundation, Structural Frame, Exterior Walls, Roof, Major Mechanical and Electrical Systems,

etc. It includes all the cost components to make the Facility a stand alone Building Shell.

BUILDING SHELL

PROJECT ESTIMATE NAME
PRIMARY FACILITIES
GENERAL ADMINISTRATION FACILITY
BUILDING SHELL
01 SUBSTRUCTURE
02 SUPERSTRUCTURE
03 EXTERIOR CLOSURE
04 ROOFING
07 CONVEYING SYSTEMS
08 PLUMBING
09 HVAC
10 FIRE PROTECTION SYSTEMS
11 ELECTRICAL POWER & LIGHTING
12 ELECTRICAL SYSTEMS
FUNCTIONAL SPACE AREAS
SUPPORTING FACILITIES
MODIFIERS

Each WBS Level is further expanded to its lowest Level to include the total hierarchy, i.e. 02 Superstructure, 0201 Floor Construction, 020101 Structural Frame. The assemblies are always located at the lowest level of the branch.

WBS LEVEL

PROJECT ESTIMATE NAME
PRIMARY FACILITIES
GENERAL ADMINISTRATION FACILITY
BUILDING SHELL
01 SUBSTRUCTURE
02 SUPERSTRUCTURE
0201 FLOOR CONSTRUCTION
020101 STRUCTURAL FRAME
020102 STRUCTURAL INTERIOR WALLS
020103 FLOOR DECKS AND SLABS
020104 BALCONY CONSTRUCTION
020105 RAMPS
020106 FLOOR RACEWAY SYSTEM
020190 OTHER FLOOR CONSTRUCTION
0202 ROOF CONSTRUCTION
0203 STAIR CONSTRUCTION

4.8.1.2 Functional Space Area

The organization of the Functional Space Areas are by the default FSAs of a Facility, i.e.: the General Administration Facility includes the default FSAs Building Support Area, Closed Office Space, Open Office Space, and Security. Optional default FSAs are also provided and are disabled. Disabled levels do not add any cost to the project. The optional default FSAs for this Facility are Auditorium, Covered Exterior Entryway, and Data Processing Room.

FUNCTIONAL SPACE AREAS

```

PROJECT ESTIMATE NAME
  PRIMARY FACILITIES
    GENERAL ADMINISTRATION FACILITY
      BUILDING SHELL
        FUNCTIONAL SPACE AREAS
          AUDITORIUM
          BUILDING SUPPORT AREA
          COVERED EXTERIOR ENTRYWAY
          DATA PROCESSING ROOM (SMALL)
          CLOSED OFFICE SPACE
          OPEN OFFICE SPACE
          SECURITY

```

Each FSA has child levels organized by the TRACES Generic WBS. The assemblies included in the FSAs are for items that are specific for each FSA, i.e. Interior Construction, Interior Finishes, Specialties, Furnishings, Plumbing Fixtures, Light Fixtures, etc. (NOTE: Generally the MEP (mechanical, electrical, and plumbing) assemblies included for the FSAs includes only assemblies for plumbing, light fixtures, electrical outlets or special HVAC requirements; all other MEP system assemblies are included in the building shell.)

FSA EXPANDED LEVEL

```

PROJECT ESTIMATE NAME
  PRIMARY FACILITIES
    GENERAL ADMINISTRATION FACILITY
      BUILDING SHELL
        FUNCTIONAL SPACE AREAS
          AUDITORIUM
          BUILDING SUPPORT AREA
          COVERED EXTERIOR ENTRYWAY
          DATA PROCESSING ROOM (SMALL)
          CLOSED OFFICE SPACE
          OPEN OFFICE SPACE

```

MIL-HDBK-1010B

INTERIOR CONSTRUCTION
INTERIOR FINISHES
ELECTRIC POWER & LIGHTING
FURNISHINGS

SECURITY
SUPPORTING FACILITIES
MODIFIERS

4.8.2 Supporting Facilities

The Supporting Facilities Level is used to add Sitework Models to the Project and organize the Supporting Facilities costs.

SUPPORTING FACILITIES

PROJECT ESTIMATE NAME
PRIMARY FACILITIES
GENERAL ADMINISTRATION FACILITY MODULE
SUPPORTING FACILITIES
MODIFIERS

4.8.3 Modifiers

Modifiers are costs that are calculated based on the Total Direct Construction Cost of the Project and proportionally distributed to all the Primary and Supporting Facility Assemblies of the Project. (The green colored Modifiers Level indicates it is a Distributed Level.) The modifiers are Area Cost factors, Schedule, and Escalation and are located in the modifiers level of the Project Tree. Contingency and SIOH are included as a reporting function and are not included in the modifiers level. (A detailed explanation of each of the modifiers is included in Section 6.8.2 Location Area Modifier, Section 6.8.15 Schedule Modifiers, and Section 6.8.16 Escalation Factor of the PBMW instruction).

MODIFIERS

PROJECT ESTIMATE NAME
PRIMARY FACILITIES
General Administration Facility Module
SUPPORTING FACILITIES
MODIFIERS

NOTE: Area Cost Factors (identified as Location Area Modifiers) as used in the PBMW provides separate modifiers for material, labor, and equipment. Appendices 8.3 and 8.4 shows a combined Area Cost Factor for each location. Appendices 8.3 and 8.4 are to be used with NAVFAC or DoD Guidance Costs.

4.9 Building Model Groups

The Building Model Types are organized by 10 Building Model Group Libraries. The table below shows the name of the Group and the corresponding filename of each group. The building model groups are located in the path \pbmw30\building\new.

BUILDING MODEL GROUP LIST

GROUP NAME	FILENAME (.pws)
Administrative Facilities	admin_n
Communication Facilities	commun_n
Dining Facilities	dining_n
Dormitories	dorm_n
Maintenance Facilities	maint_n
Maintenance Hangers	hangar_n
Medical Facilities	medic_n
Military Housing	house_n
Other	other_n
Storage Facilities	storag_n

4.9.1 Building Model Types

- There are currently 68 Building Model Types available. A detailed description of each Building Model Type and its associated FSAs are listed in a table located in the Appendix of the PBMW instructions. The table can also be accessed via the program by selecting the Model Reference Help icon from the PBMW applications group, or chose Help from any activated Form.
- A table of each Building Model Type, and associated Model Group Library is located in the Appendix of the PBMW instructions.

Matrices of Building Model Types and their respective FSAs, which graphically display the FSAs that are included in each Building Model Type, are located in the Appendix of the PBMW instructions.

4.9.2 Library of Functional Spaces Areas

There are currently 232 Functional Space Areas available which are used throughout the existing Building Models. The library of FSAs is included in the project file \pbmw30\library\fsa_lib.pws.

The FSAs are organized in three groups: Building General, Medical, and Military Housing. The FSAs may be added to an existing building model estimate or used to build a new building model.

4.10 Sitework Model Groups

The "sitework.pws" contains a database of models for sitework related activities and is located in the path \pbmw30\sitework\.. They are organized by the following areas:

- Site Improvements
- Site Preparation
- Site Utilities

For estimates that have sitework Models that will be treated as Supporting Facilities, the Sitework modules will facilitate the estimating process. To incorporate a Sitework Model into your current working estimate, simply follow the following tips:

1. Open (as read-only) the "sitework.pws".
2. Drag and Drop the desired Models into the Supporting Facilities Level in your Project Estimate.
3. View the Sitework Forms and edit the parameters as required.
4. Total your Project Estimate.

4.11 Composite Assemblies

The cost items that are used in the PBMW system are composite cost assemblies. These assemblies represent the unit cost of the detailed assemblies described below. Composite assemblies are the lowest level component of the TRACES Generic WBS. The PBMW adheres to the WBS coding for the database of composite assemblies.

The Library of Composite Assemblies contains the assemblies organized by the TRACES Generic WBS. It is located in the file \pbmw30\library\cmpasb95. The cmpasb95.pws has been provided so that estimators that have advanced project data can augment assemblies as needed to their Project Estimate.

4.12 Detailed Assemblies

The detailed assemblies are measurable work packages composed of factored line items from the National Unit Price Book 95 (UPB95).

The Library of Detail Assemblies contains the assemblies organized by the TRACES Generic WBS. It is located in the file \pbmw30\library\datasb95. The datasb95.pws has been provided for information only.

4.13 Detailed Instructions

Detailed instructions for the use of this system is contained in the PBMW Users Manual.

4.14 Preparation of a DD1391

Preparation of a DD1391 is available. Refer to PBMW Users Manual, page 6-1. Page 12.10, sample output, shows a completed DD1391.

Part 5: Construction Cost Estimates

5.1 General

5.1.1 Detailed Cost Estimates

Detailed Cost Estimates are required with each submittal. Prepare all estimates in the Work Breakdown Structure (WBS) format using the Success estimating program. Use of the work breakdown structure to the assembly level will be required. Contact the Cost Engineering Organization of the applicable EFD for detailed requirements. Refer to Sections 7.15 and 7.16 for the detailed WBS. The estimate detail for each submittal shall be consistent with the level of design required for that submittal. Accurate quantity take-off, inclusion of all elements of construction, and accurate unit prices for the project's geographic location are fundamental to the development of a good cost estimate.

NOTE: Success is a copyrighted commercial estimating program. It will be furnished to an A/E firm only for use to prepare estimates for DoD projects.

5.1.2 Uses of the Cost Estimate.

Properly prepared cost estimates provide a check of plans and specifications for constructability, coordination conflicts, discrepancies, and omissions. Cost estimates are used by the Government to establish and verify budget cost, and to develop historical data for future estimating and verification of contract bid prices.

5.1.3 Final Government Estimate.

Final Government estimates are to be classified "For Official Use Only".

5.1.4 Structure of Estimates and Work Requiring Multiple Estimates.

Prepare separate estimates for each new non-identical building, structure, or addition costing over \$100,000 contract cost. Costs of alteration work to existing buildings will not be included with the building addition costs. When one construction contract contains more than one type of work (e.g., new construction, repair, equipment installation), the estimate shall be structured such that each type of work is identified and summarized separately. In addition to an overall or composite summary sheet, each type of work requires a separate summary sheet. Costs from

these separate summary sheets must be directly transferable to the composite summary sheet.

5.2 Preliminary (35 Percent) Estimate

5.2.1 Preliminary Estimate

Preliminary Estimates are based on Materials Take-off. The estimate for this submittal shall reflect cost based on reasonably accurate take-offs of materials and systems consistent with the level of design. For those elements of the project where the status of design does not permit a reasonably accurate take-off of quantities or firm pricing of individual items of work, systems unit prices may be used. Lump sum costs are not acceptable. Use of empirical costs shall be minimized.

5.2.2 Preliminary Estimate Should Monitor the Estimated Construction Cost.

The 35 percent estimate will be completed using the Success program and the WBS. The 35 percent estimate, through adjustments, should monitor the estimated construction cost until the prefinal estimate is prepared. It is very important that if indications of cost exceeding allotted funds are confirmed, the project manager be contacted for instructions.

5.3 Prefinal Estimates

5.3.1 Prefinal Requirements.

Prepare the prefinal estimate from complete drawings and specifications. Full and accurate descriptions of each system shall be provided. Quotations must be obtained for all items of substantial quantity or cost. Documentation must be provided for all line items that represent more than one percent of the contract cost or are of such a nature that a standard price is not available. Documentation may be in the form of written quotations or may be taken by telephone. In either case, the documentation must show brand name, model number of item, company name, person contacted, and date of quote.

The first entry for each system shall be a narrative description followed by applicable subsystem numbers. Instructions for inserting the system descriptions when using the program are available in the guide.

5.3.2 Success Estimates.

For all projects over \$100,000, and all new buildings or additions a Success estimate is required. The A/E will be required to prepare the estimate using the latest Success version which is a part of the Construction Criteria Base (CCB), CDROM. Firms not using the CCB should contact the EFD/EFA Cost Engineer. Hard and electronic copies of estimates will be submitted with each submittal. The A/E shall be responsible for preparing, loading, printing, and checking the estimate prior to prefinal submission. Contact should be made with the Project Manager prior to prefinal submission to reconfirm programmed construction costs for the contract. Where A/E estimate exceeds programmed construction costs, recommendations for cost reduction or proposed bid items should be provided with the prefinal submission. Minimum computer equipment necessary for running estimates is as follows.

5.3.3 Success™ (Computer Requirements)

a) Hardware

- (1) An IBM Personal Computer, or 100 percent compatible, capable of running Microsoft Windows
- (2) A VGA resolution, or above, color monitor
- (3) A printer (optional, but recommended).
- (4) A Microsoft or 100% Microsoft Windows compatible mouse.
- (5) 4 megabytes of available memory (8 megabytes or greater recommended for Windows 3.1). For Windows 95, 16 megabytes is recommended.

b) Minimum Software Requirements

- (1) Microsoft DOS version 5.0 or higher.
- (2) Microsoft Windows or Microsoft Windows for Workgroups version 3.1 or higher running in enhanced mode or Windows 95.

c) Network

- (1) Any Microsoft Windows or Windows 95 compatible network.

5.4 Final Estimate.

Requirements are the same as prefinal except for correction and inclusion of prefinal comments. (A floppy disk containing the completed estimate will also be submitted.) When the final A&E estimate varies by more than plus or minus 10-15 percent of the low bid, an A&E review and analysis of the estimate will be required at no additional cost to the Government. Discuss specific requirements with the applicable EFD/EFA. This analysis shall compare the complete project by specification sections tabulating a comparison of the Government estimate and contractor's proposal. Reasons for differences are to be stated. A more detailed format may be obtained from the EFD/EFA Cost Engineers.

5.5 Success Examples

Examples from a Success estimate are included for illustration only.

- A - Summary Report
- B - System Report
- C - Assembly Category Report
- D - Mark-up Report
- E - Detail Report Unburdened
- F - Error Report
- G - End item Report
- H - Property
- I - Specification
- J - Labor Summary Report
- K - Hard Copy Pricing Database

Typical submittal shall consist of reports as requested by cognizant EFD/EFA. See Part 8.6 for Sample Success Estimate

5.5.1 Summary Report

A-Summary Report

Part 8.6, (page 130) shows Total and Unit Costs for the base bid.

5.5.2 System Report.

B-System Report

Part 8.6, (page 131) shows Total and Unit Costs by system level of the WBS.

5.5.3 Assembly Category Report

C-Assembly Category Report

Part 8.6, (page 132) shows Total and Unit Costs by sub-system and assembly category level of the WBS.

5.5.4 Contractor Mark-Up Report

D-Markup Report

Part 8.6, (page 133) shows mark-up applied to contractors.

5.5.5 Detailed Report

E-Detail Report Unburdened

Part 8.6, (page 134, page 135) show the detailed estimate by assembly category.

5.5.6 Error Report

F-Error Report

Part 8.6, (page 136) shows error report. Location of and reasons for errors will be listed.

5.5.7 End Item Report

G-End Item Report

Part 8.6, (page 137) shows the input listing.

5.5.8 Property Report

H-Property Report

Part 8.6, (page 138) shows properties of the estimate.

5.5.9 Specification Report

I-Spec Summary Report

Part 8.6, (page 139) shows specification summary report.

5.5.10 Labor Summary Report

J-Labor Summary Report

Part 8.6, (page 140) shows Wage Rates used in the estimate.

5.5.11 Database Listing

K-Hard Copy Pricing Database

Part 8.6, (page 141) shows a pricing database listing report.

PART 6: OTHER TYPES OF ESTIMATES

6.1 Estimates for Change Orders.

Estimates for change orders to the contract plans and specifications shall be accomplished with adequate backup to negotiate. These estimates must use the "Estimate for Change Order" summary sheet (NAVFAC 4330/43). Estimates and summaries must be prepared for both increases and decreases in contract cost. Documentation must also be provided for "no-cost" changes. See 7.5 Figure 13 and Figure 14.

6.2 Negotiated Construction Contracts.

In addition to requirements established for competitively bid construction contracts, estimates for negotiated construction contracts shall meet the following requirements.

a) Use a computer-run Success estimate unless estimated construction cost is less than \$100,000.

b) Final estimate must accurately reflect the final plans and specifications. Direct comparison with the construction contractors estimate will be made in quantity takeoffs; quotes for major material; crew size, equipment, and production rates; and area labor rates. Field overhead must be itemized. Where conflicts exist between A&E estimate and construction contractor estimate, the A&E will provide prompt verification for items in question.

c) Should conflicts between plans and specifications occur, the A&E will promptly clarify intent and prepare a draft "as negotiated" amendment.

6.3 Estimates for Special Projects.

The Facilities Projects Manual, OPNAVINST 11010.20F, provides detailed definitions, policy, cost limitations, preparation, and submittal procedures for special project estimates. This instruction applies to all facilities projects, regardless of cost or method of accomplishment, financed from: (a) Operations and Maintenance, Navy and Naval Reserve, (b) Research, Development, Test and Evaluation, Navy, (c) Military Construction, Navy and Naval Reserve, (d) non-appropriated funds, (e) Other Procurement, Navy, and (f) Defense Business Operations Funds (DBOF). Project documentation forms include DD 1391 FY____ Military Construction Project Data, DD 1391c FY _ Military

Construction Project Data Continuation Sheet, and NAVFAC 11013/7 (Rev. 1-78) Cost Estimating Form. Appendix C of the Facilities Projects Manual has filled-out examples of these forms.

The Cost Estimating Form, NAVFAC 11013/7, or a similar form shall be used in submitting cost estimates for all special projects. Itemize specific quantities and unit costs for each item whenever possible, instead of using lump sum costs. The project cost estimate may either have the contractor overhead and profit, inflation, and contingencies within each line item of the estimate or these costs may be listed separately at the end of the cost estimate. In either case, the rates used for each of these items must be shown at the end of the cost estimate. Costs for planning, design, and SIOH (supervision, inspection, and overhead) or contract administration shall be identified as separate line items. For combination projects, the cost estimate must identify the classification of work (construction, repair, maintenance, or equipment installation) for each line item or group of line items. Estimated costs must be based on current prices and escalated to the year proposed for project execution. Chapters 2 and 3 of the Facilities Projects Manual go into specific detail on special project documentation and submission.

6.3.1 Cost Basis

Costs should be based on location of project. Indicate Area Cost Factor.

6.3.2 Escalated Costs

Escalate costs one year from date of submission.

6.4 Estimates for Family Housing

6.4.1 Site Engineering Investigations

NavFac Instruction 11101.95A Site Engineering investigations for Navy New Family Housing Construction Projects contains Budget Estimate preparation instructions. Design estimates at the 35% and later phases should follow guidelines in Part 5 Construction Cost Estimates.

6.4.2 Pricing for Family Housing

All pricing for family housing is based upon net square footage. NET AREA: Net floor area is the space of a living unit with the following exclusions:

1. Exterior and party walls.
2. Half thickness of interior walls adjacent to excluded areas.
3. Utility and laundry rooms.
4. Interior and exterior bulk storage.
5. Washer and dryer closet (not to exceed 30 SF)

6. Furnace, domestic water heater, and solar equipment spaces.
7. Landings at each floor (not to exceed 10 SF each). Stairways, and finished space under stairs not exceeding 4 feet 6 inches in height.
8. Walls and interior spaces specifically designed for passive solar systems (other than required habitable areas).
9. Unfinished attic and basement space.
10. Patios/balconies and terraces.
11. Carports and garages.
12. Area required to comply with accessibility standards.
13. Separate entry/weather vestibule (not to exceed 16 SF).

6.4.3 Preparation of New Family Housing Project Budget

1. Project Budget: See Figure 8 for project budget format. This budget information, in connection with the DD-1391 (Figure 9), will be used to prepare final project budget for the budget submittal to Congress.

2. Supporting Costs: The project supporting costs are all those improvements outside the building five feet line, including: tot-lots and recreational facilities; landscape and irrigation systems; grading and drainage; utility systems; paving; demolition, contamination or environmental remediation; etc.

3. Supporting Cost Estimate: As backup for the budget figures included in the DD-1391 (Figure 9) and Project Budget (Figure 8), a complete concept cost estimate shall be included as an attachment to the SEI (Site Engineering Investigation) report. The estimate shall include sketches, or other explanation, of the basis of the estimated quantities. A list of possible project costs is included in NAVFAC Instruction 11101.95A.

6.4.4 Preparation of Draft DD-1391 and Supporting Cost Data

6.4.4.1 DD-1391 Preparation

The DD-1391, Figure 9, shall be completed through block 10; "Description of Proposed Construction". Project description shall include both standard and special construction requirements.

6.4.4.2 Dwelling Unit Costs

Dwelling unit costs, within the five feet line from the building, are based on combination of the total net square footage of the project times a project factor times a Department of Defense

standard unit cost (Section 7.13, Part II). A preliminary DD-1391 with dwelling unit cost shall be provided to the preparer.

6.4.5 Special Construction Features

Special construction requirements: The report shall include a description and cost estimate of all additional special construction features required, as a result of the utility, topographic, environmental or subsurface surveys.

6.4.6 New Family Housing Project Budget

See Figure 8 for sample Family Housing Project Budget.

MIL-HDBK-1010B

DOD FAMILY HOUSING COST MODEL

SERVICE: DON LOCATION: CAMP PENDLETON O'SEAS: (Y/N) N (90)

BASELINE: (\$000)

(382) (1179) (47) = \$21,168

(# OF UNITS) (AVE NET SF) (\$/NSF) = 5' LINE

PROJECT FACTORS:

(1.12) (.96) (.98) = 1.0537

(ACF) (PROJ SIZE FAC) (UNIT SIZE FA) = PROJ FAC

HOUSING COST:

(\$21,168) (1.0537) = \$22,305

(5' LINE COST) (PROJECT FACT) = HSG COST

(\$1.30) (1.12) (382) = \$ 558

(\$/UNIT FIRE SPR) (ACF) (# OF UNITS) = T. FIRE SPR

(\$0) (1.12) (382) = \$ 0

(\$/UNIT SOLAR) (ACF) (# OF UNITS) = T. SOLAR

(\$22,305)(\$558)(\$0)/(382) = \$59.85

(HSG COST)(FIRE SPR COST)(SOLAR COST)/(# OF UNITS) = AVE UNIT

SUPPORTING COST:

PAVING AND SITE IMPROVEMENTS 3,637

UTILITIES 3,347

LANDSCAPING 790

RECREATION 500

SPECIAL CONSTRUCTION FEATURES 335

DEMOLITION 110

26.4% OF TOTAL PROJECT COST SUPPORT COST: \$8,719

SUMMARY:

(\$22,305)+(\$558)+(\$0)+(8,719)=\$31,582

(HSG COST)+(FIRE SPR COST)+(SOLAR COST)+(SUPPORT COST)=SUBTOTAL

(\$31,582)+(\$1,579)+(\$1,990) = \$35,151

(SUBTOTAL)+(CONTINGENCY)+(SIOH) = SUBTOTAL

ROUND: = \$35,150

(\$35,150)/(382)/(1242) = \$74

(PROJECT COST)/(# OF UNITS)/(ANSF*PROJ FAC) = PROJ \$/NSF

Figure 7: DOD Housing Cost Model

NEW FAMILY HOUSING

PROJECT BUDGET

1.	Programmed Amount (PA)	\$ _____
2.	SIOH (Line 1/1.055)	\$ _____
3.	PCAS (Line 2/1.015)	\$ _____
4.	Contingency (Line 3/1.05)	\$ _____
5.	Land Acquisition Costs	\$ _____
6.	SUBTOTAL (Line 4 - Line 5)	\$ _____
7.	Utility Connection Charges	
	A. Electricity	\$ _____
	B. Gas	\$ _____
	C. Sanitary Sewer	\$ _____
	D. Water	\$ _____
	E. Telephone	\$ _____
	F. Storm Water	\$ _____
	G. Refuse Disposal, Recycling	\$ _____
	H. Subtotal	\$ _____
8.	Special permits, fees	\$ _____
9.	SUBTOTAL (Line 6 - Line 8)	\$ _____
10.	Special Construction	\$ _____
11.	SUBTOTAL (Line 9 - Line 10)	\$ _____
	Total Funds Available for Construction	\$ _____

Figure 8: New Family Housing Project Budget

Part 7: BLANK FORMS AND REFERENCES

7.1 DD Form 1391.

1. COMPONENT		FY 19_		MILITARY CONSTRUCTION PROJECT DATA		2. DATE:	
3. INSTALLATION AND LOCATION				4. PROJEC TITLE			
5. PROGRAM ELEMENT		6. CAT. CODE	7. PROJECT NUMBER P- _____		8. PROJECT COST (\$000)		
9. COST ESTIMATES							
A.C.F.		0.87	DATE ESCALATED TO:		U/M	QUANTITY	UNIT COST
F.E.R.		n/a	ITEM		1 APR 99		COST (\$000)
PRIMARY FACILITY							
SUPPORTING FACILITIES					LS		
SPECIAL CONSTRUCTION FEATURES					LS		
ELECTRICAL UTILITIES					LS		
MECHANICAL UTILITIES					LS		
ROADS,PARKING,SIDEWALKS					LS		
SITE IMPROVEMENTS					LS		
DEMOLITION					LS		
SUBTOTAL							
CONTINGENCIES (5%)							
TOTAL CONTRACT COST							
SUPERVISION, INSPECTION, OVERHEAD (6%)							
TOTAL REQUEST							
TOTAL REQUEST (ROUNDED)							
EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS (NON ADD)							
10. DESCRIPTION OF PROPOSED CONSTRUCTION							
Meets Military Requirements				Major Claimant Endorsement			
C.O Activity		Signature / Date		M.C. Representative		Signature / Date	
Project Validation				Project Cost Certification			
Signature / Date				Signature / Date			

file:

Figure 9: Form DD1391 (blank)

7.2 Primary Facility Unit Cost Development

PRIMARY FACILITY UNIT COST DEVELOPMENT				
TITLE:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	P#:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	
LOCATION:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	DATE:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	
PREPARED BY:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	PH#:	<div style="border-bottom: 1px solid black; height: 1.2em;"></div>	
PROPOSED FACILITY GUIDANCE FACILITY	CAT CODE	SIZE M2	ACF	DATE mo/yr
HISTORICAL GUIDANCE SOURCE: <div style="border-bottom: 1px solid black; width: 100%;"></div>				
HISTORICAL GUIDANCE UNIT COST:				
	HISTORICAL UNIT COST	SIZE FACTOR	AREA COST FACTOR	ESCALATION FACTOR
	<div style="border-bottom: 1px solid black; width: 100%;"></div>	X	<div style="border-bottom: 1px solid black; width: 100%;"></div>	X
		X	<div style="border-bottom: 1px solid black; width: 100%;"></div>	X
			<div style="border-bottom: 1px solid black; width: 100%;"></div>	=
<u>SPECIFIC FEATURES OF ADDITIONAL COST</u>				
BUILT-IN EQUIPMENT	QUANTITY	UNIT COST	TOTAL COST	ADJ U/C
			0	0.00
SUBTOTAL BUILT-IN EQUIPMENT			0	0.00
OTHER ADDED FEATURES				
			0	0.00
			0	0.00
SUBTOTAL OTHER ADDED FEATURES			0	0.00

Figure 10: Primary Facility Unit Cost Development (blank)

7.3 Supporting Facility Cost Development.

BACK UP ESTIMATE						
TITLE: _____				DATE: _____		
LOCATION: _____				P#: _____		
FILE: _____	QTY	U/M	UNIT COST	SYSTEM COST	SYSTEM UNIT COST	SYSTEM TOTAL COST
SUPPORTING FACILITIES						
01 SPECIAL FOUNDATION CONDITIONS						
02 SPECIAL FOUNDATION CONDITIONS						
_____	0	M	0.00	0		
_____	0	EA	0.00	0		
_____	0	M			0.00	0
17 SITE PREPARATION						
01 SITE CLEARING						
_____	0	HA	0.00	0		
_____	0	HA			0.00	0
02 SITE DEMOLITION						
_____	0	M2	0.00	0		
_____	0	EA	0.00	0		
_____	0	LS			0.00	0
03 SITE EARTHWORK						
_____	0	M3	0.00	0		
_____	0	HA	0.00	0		
_____	0	M3			0.00	0
18 SITE IMPROVEMENTS						
01 ROADWAYS						
_____	0	M2	0.00	0		
_____	0	M2	0.00	0		
_____	0	M2			0.00	0
02 PARKING LOT						
_____	0	M2	0.00	0		
_____	0	M	0.00	0		
_____	0	M2			0.00	0

Figure 11: Supporting Facility Cost Development (blank)

7.4 Budget Estimate Summary Sheet.

B U D G E T E S T I M A T E S U M M A R Y S H E E T					
P. NO. : P-		FY			
TITLE:		DATE OF ESTIMATE:			
LOCATION :		DESIGN STATUS (%):			
PREPARED BY:		DATE ESCALATED TO:			
A.C.F.:	F.E.R.:	ESCALATION FACTOR			
	UM	QTY	UNIT COST	ESCALATED COST ROUNDED	
TOTAL CONTRACT COST W/O CONTINGENCY CONTINGENCY (5%) TOTAL CONTRACT COST SIOH (6%) TOTAL BUDGET COST					

Figure 12: Budget Estimate Summary Sheet (blank)

7.5 Change Order Summary Sheet.**7.5.1 Change Order Sheet NAVFAC 4330/43 8/88 Back-up**

ESTIMATE FOR CONTRACT MODIFICATION		DATE: _____	
<i>NAI</i>			
CONTRACT TITLE: _____		CONTRACT NO: _____	
ROICC OFFICE: _____			
DESCRIPTION: _____			
PRIME CONTRACTOR'S WORK			
		Revisions/Comments	
1. Direct Materials			
2. Sales Tax on Materials	of line 1		
3. Direct Labor			
4. Insurance, Taxes, and Fringe Benefits	of line 3		
5. Rental Equipment			
6. Sales Tax on Rental Equipment	of line 5		
7. Equipment Ownership and Operating Expenses			
8. SUBTOTAL (add lines 1 - 7)			
9. Field Overhead	of line 8		
10. SUBTOTAL (Add Lines 8 & 9)			
Prime Remarks: _____			
SUBCONTRACTOR'S WORK			
11. Direct Materials			
12. Sales Tax on Materials	of line 11		
13. Direct Labor			
14. Insurance, Taxes, and Fringe Benefits	of line 13		
15. Rental Equipment			
16. Sales Tax on Rental Equipment	of line 15		
17. Equipment Ownership and Operating Expenses			
18. SUBTOTAL (add lines 11 - 17)			
19. Field Overhead	of line 18		
20. SUBTOTAL (add lines 18 & 19)			
21. Home Office Overhead	of line 20		
22. Profit	of line 20		
23. SUBTOTAL (Add Lines 20 - 22)			
Sub's Remarks: _____			
SUMMARY			
24. Prime Contractor's Work (from line 10)			
25. Sub-contractor's Work (from line 23)			
26. SUBTOTAL (add lines 24 & 25)			
27. Prime's Overhead on subcontractor	of line 25		
28. Prime's Home Office Overhead	of line 24		
29. Prime's Profit	of line 26		
30. SUBTOTAL (add lines 26 - 29)			
31. Prime Contractor's Bond Premium	of line 30		
32. TOTAL COST (Add Lines 30 & 31)			
Estimated time extension and justification _____			
Prime Contractor name: _____			
Subcontractor name: _____			
Signature & Title of preparer _____			
Date _____			
Cost estimate prepared independently.			
FOR OFFICIAL USE ONLY			

Figure 13: Change Order Summary -Front (blank)

7.5.2 Change Order Sheet NAVFAC 4330/43 8/88 Summary

ESTIMATE FOR CONTRACT MODIFICATION						CONTRACT NO: _____				
BREAKDOWN OF DIRECT COSTS						DATE: _____				
ITEMS OF WORK FOR Prime Contractor	QTY	UNIT	MATERIAL		LABOR		O R	EQUIPMENT		
			Unit Cost	Total Cost	Unit Cost	Total Cost		Qty	Rate	Total
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
16.										
17.										
18.										
19.										
20.										
21.										
22.										
23.										
24.										
25.										
DIRECT Prime Contractor's TOTALS							R	Total (Rental)		
							O	Total (Owned)		
ITEMS OF WORK FOR Subcontractor	QTY	UNIT	MATERIAL		LABOR		O R	EQUIPMENT		
			Unit Cost	Total Cost	Unit Cost	Total Cost		Qty	Rate	Total
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
16.										
17.										
18.										
19.										
20.										
21.										
22.										
23.										
24.										
25.										
DIRECT Subcontractor's TOTALS							R	Total (Rental)		
							O	Total (Owned)		

NAVFAC 4330/43 (Back) page 2

Figure 14: Change Order Summary -Back (blank)

7.6 SI Conversion Factors

<u>Quantity</u>	<u>Multiply</u>	<u>By</u>	<u>to Obtain</u>	
Length	inch	25.4	millimeter	mm
	foot	0.3048	meter	m
	yard	0.9144	meter	m
	mile (U.S. Statute)	1.609347	kilometer	km
	millimeter	0.039370079	inch	in
	meter	3.28084	foot	ft
	meter	1.093613	yard	yd
	kilometer	0.62137	mile	mi
	square inch	645.16	square millimeter	mm ²
	square foot	0.092903	square meter	m ²
	square yard	0.836127	square meter	m ²
	square mile (U.S. Statute)	2.589998	square kilometer	km ²
	acre	4046.873	square meter	m ²
	acre	0.404687	hectare	
Area	square millimeter	0.001550003	square inch	in ²
	square meter	10.76391	square foot	ft ²
	square meter	1.19599	square yard	yd ²
	square kilometer	0.386101	square mile	mi ²
	square meter	0.000247104	acre	
	hectare	2.471044	acre	
	cubic inch	16387.06	cubic millimeter	m ³
	cubic foot	0.02831685	cubic meter	m ³
	cubic yard	0.764555	cubic meter	m ³
	gallon (U.S.liquid)	3.785412	liter	l
Volume	quart (U.S.liquid)	0.946353	liter	l
	cubic millimeter	6.10238E-05	cubic inch	in
	cubic meter	35.314662	cubic foot	ft
	cubic meter	1.307951	cubic yard	yd
	liter	0.264172	gallon (U.S.liquid)	gal
	liter	1.056688	quart (U.S.liquid)	qt

Quantity Multiply By to Obtain

Mass	ounce (avoirdupois)	28.34952	gram	g
	pound (avoirdupois)	0.453592	kilogram	kg
	short ton	907.185	kilogram	kg
	gram	0.035273966	ounce (avoirdupois)	oz av
	kilogram	2.204622	pound (avoirdupois)	lb av
	kilogram	0.001102311	short ton	

7.7 Units of Measure and Their Symbols.

<u>Symbol</u>	<u>Meaning</u>	<u>Notes</u>
AC	Acres	
BD	Hospital Beds, Normal Capacity	
BL	Barrels (42 gals each)	
BX	Boxes (fire alarm etc.)	
CF	Cubic Feet	
CM	CF/Minute	1
CP	Candlepower 1	
CY	Cubic Yards Tide	1
DS	Depth of Water Over Sill @ High Tide	1
DW	Depth of Water @ Low Tide	
EA	Each	
FA	Family Units (housing)	
FB	Feet of Berthing (ships/boats/small craft)	
FP	Firing Point (firing ranges)	1
GA	Gallons	
GM	Gallons Per Minute	
HO	Holes (golf course)	1
KG	Thousands of Gallons Per Day, Capacity	
KV	Kilovolt-Amperes, Capacity (KVA)	
KW	Kilowatts	1

LA	Lanes (bowling)	1
LC	Light Care (hospital spaces)	1
LF	Linear Feet	
MB	Millions of BTU Per Hr (capacity)	
ME	Meters (length)	1
MG	Millions of Gallons	1
MI	Statute Miles	
NF	Net Square Feet (housing)	1, 2
NS	Net square Feet (storage)	1, 3
OL	Outlets (number of)	
OU	Operating Units	
PH	Pounds Per Hour	1
PH	Persons, Designed Capacity	
SE	Seats (number of)	
SF	Square Feet	
SH	Stacking Height	1, 3
SI	Sites	1
SP	Service Points	1
SY	Square Yards	
TC	Total Cubic Feet	1, 3
TH	Tons Per Hour (capacity)	1
TN	Tons (capacity)	
VE	Vehicles (number of)	

1 Not listed in DODINST 4165.3 of 24 October 1978, as amended

2 As defined by NAVFACENGCOM for housing purposes

3 As defined by NAVSUPSYSCOM for supply facilities

7.8 Acronyms and Abbreviations.

ABSLA	Approved Basic Stock Level of Ammunition
ACF	Area Cost Factor
ADCA	Anticipated Date of Contract Award
A&E	Architect and Engineer
AGI	Activity General Information
AH	Alternate Host
AICUZ	Air Installations Compatible Use Zones
AIS	Annual Inspection Summary
ASD	Assistant Secretary of Defense
BAM	Baseline Assessment Memorandum
BASE REP	Shore Base Readiness Report
BEAP	Base Exterior Architecture Plan
BEQ	Bachelor Enlisted Quarters
BESEP	Base Electronics Systems Engineering Plan
BFR	Basic Facility Requirements
BLS	Base Loading System
BOQ	Bachelor Officer Quarters
CAUSE	Computer Assisted Utility Systems Evaluation
CCD	Category Code Directory (data base)
CCN	Category Code Number
CCTV	Closed Circuit Television
CES	Computerized Estimating System
CES-H	Computerized Estimating System - Historical
CIP	Capital Improvements Plan
CL3-D	Class 3 (Relocatable); planned for disposition
CL3-I	(planning action)
CL3-I	Class 3 (Relocatable); used on interim basis
CL3-U	(planning action)
CL3-U	Class 3 (Relocatable); temporary use
CL3-U	(planning action)
CMC	Commandant, Marine Corps
CNET	Chief of Naval Education and Training
CNO	Chief of Naval Operations
CO	Commanding Officer
COMNAVFACENGCOM	Commander, Naval Facilities Engineering Command
COMNISCOM	Naval Investigative Service Command
CONSTR	New Construction (planning action)
CONUS	Continental United States
CONVFR	Convert From (planning action)
CONVTO	Convert To (planning action)
CPS	(Final) Consolidated Personnel Summary
CPV	Current Plant Value

MIL-HDBK-1010B

CQM	Contractor Quality Management
CRD	Certified, Ready for Design
CY	Cubic Yards (unit of measure)
D	Planning Action Designator
DASN	Deputy Assistant Secretary of the Navy
DCNO	Deputy Chief of Naval Operations
DDESB	Department of Defense Explosives Safety Board
DEMOL	Demolition (planning action)
DF	Discount Factor
DISPOS	Disposable Asset (planning action)
DPS	Decision Package Sets
DRA	Defense Relocation Account (funds)
DOD	Department of Defense
DSA	Defense Supply Agency
EA	Economic Analysis
EA	Each (unit of measure)
EAF	Environmental Adjustment Factor
ECIP	Energy Conservation Investment Program
EE	Engineering Evaluation
EFA	Engineering Field Activity
EFD	Engineering Field Division
EMCS	Energy Monitoring and Control Systems
EOD	Explosives Ordnance Disposal
FACSO	Facilities Systems Office (Port Hueneme, CA)
FEC	Foreign Exchange Cost
FEP	Facility Engineering Plans
FER	Foreign Exchange Rate
FHS	Family Housing Plans
FPD	Facility Planning Document
FRP	Facilities Requirements Plan
FUR	Facilities Utilization Report
GEMS	Graphics Engineering and Mapping System
GSA	General Services Administration
GUP	Gross Unit Price
H/T	Host/Tenant
HCA	Hazard Control Assessment
HVAC	Heating, Ventilation, and Air Conditioning
IBOP	International Balance of Payments
ID	Planning Action Identifiers
IDS	Intrusion Detection System
IP	Investment Program

MIL-HDBK-1010B

JFAI	Joint Formal Acceptance Inspection
LS	Lump Sum (unit of measure)
MAGIC	Master Activity General Information and Control
MARCORPS	Marine Corps
MBTU	Million British Thermal Units
MCAF	Military Construction Air Force
MCNR	Military Construction Naval Reserve
MCON	Military Construction, Navy
MCP/MIS	Military Construction Programming Management Information System
MILCON	Military Construction
MILPERS	Naval Military Personnel Command
MODIFY	Modification (planning action)
NACIP	Navy Assessments and Control of Installation Pollutants
NADEP	Naval Aviation Depot (formerly Naval Air Rework Facility (NARF))
NAF	Nonappropriated Funded; Nonappropriated Fund
NATO	North Atlantic Treaty Organization
NAVAIRSYSCOM	Naval Air Systems Command
NAVCOMPT	Comptroller of the Navy
NAVELEXCEN	Electronic Systems Engineering Center
NAVELEXSECCEN	Naval Electronic Systems Security Engineering Center
NAVFAC	Naval Facilities Engineering Command (for directives and publications)
NAVFACENGCOM	Naval Facilities Engineering Command
NAVFACENGCOMHQ	Naval Facilities Engineering Command, Headquarters
NAVMEDCOM	Naval Medical Command
NAVOSH	Navy Occupational Safety and Health
NAVRESSO	Navy Resale and Services Support Office
NAVSEASYSYSCOM	Naval Sea Systems Command
NAVSUPSYSCOM	Naval Supply Systems Command
NCIS	Naval Criminal Investigative Service
NCR	National Capital Region
NEPA	National Environmental Policy Act
NFADB	Navy Facility Assets Data Base
NFH	Navy Family Housing
NMCRC	Navy Marine Corps Reserve Centers
NPV	Net Present Value
NS	Net Square Feet (unit of measure)
NFESC	Naval Facilities Engineering Service Center
O&M,N	Operations & Maintenance, Navy (funds)
OCONUS	Outside of Continental United States
OCR	Occupational Safety and Health Control Report

MIL-HDBK-1010B

OMB	Office of Management and Budget
OMSI	Operation and Maintenance Support Information
OPN	Other Procurement Navy
OPNAV	Office of the Chief of Naval Operations
OSD	Office of the Secretary of Defense
OUTG-C	Outgrant, continue (planning action)
OUTG-R	Outgrant, retrieve (planning action)
PART FRP	Partial Facilities Requirements Plan
PCAS	Post Construction Award Services
PCR	Pollution Control Report
PCS	Permanent Change of Station
PDS	Project Data Sheet
PEA	Preliminary Environmental Assessment
PED	Project Engineering Documentation
PHA	Preliminary Hazard Analysis
PID	Project Identification Document
POM	Program Objectives Memorandum
PPBS	Planning, Programming, and Budgeting System
PVA	Present Value Analysis (economic analysis)
PWC	Public Works Center
QAP	Quality Assurance Plan
RAC	Risk Assessment Code
RCRA	Resource Conservation and Recovery Act
RDT&E	Research, Development, Test & Evaluation
REASFR	Reassignment From (planning action)
REASTO	Reassignment To (planning action)
RENOV	Renovation (planning action)
REPLCE	Replace (planning action)
RETAIN	Retain For Contingency (planning action)
RETR	Retrieve (planning action identifier)
RJE	Remote Job Entry
RL	Requirements List
SA	Special Area
SCF	Supplemental Category Flag
SECDEF	Secretary of Defense
SECNAV	Secretary of the Navy
SEI	Site Engineering Investigation
SF	Square Feet, Gross (unit of measure)
SFMR	Supply Facility Management Report
SFPB	Shore Facilities Programming Board
SFPS	Shore Facilities Planning System
SH	Stacking Height (unit of measure)
SIMA	Shore Intermediate Maintenance Activity
SIOH	Supervision, Inspection, and Overhead
SIR	Savings to Investment Ratio (economic analysis)
SNDL	Standard Navy Distribution List

MIL-HDBK-1010B

SPP	Sponsor Program Proposal
SY	Square Yards (unit of measure)
SYDP	Six Year Defense Program
TCF	Total Cubic Feet (unit of measure)
TDY	Temporary Duty
TOA	Total Obligation Authority
TPAA	Total Proposed Adequate Assets
UIC	Unit Identification Code
UM	Unit of Measure
UPH	Unaccompanied Personnel Housing (now called bachelor housing)
UPS	Uninterruptible Power Source
USA	Utility System Assessments
USE	Continued Use (planning action)
UTS	Utility Technical Studies
VAC	Vacant (planning action identifier)
VI	Validation Indicator

7.9 Air Conditioning Tonnage Guide.

Category Code	Title	Square Meters of Floor Area/KW of A/C
171-15	Reserve Centers	10-16
171-20	Applied Instruction Building	NO STANDARD
171-25	Auditorium	0.21 KW/seat
171-35	Flight Simulator	3 - 8
610-10	Administration Building	8 - 11
721-11	BEQ	14 - 32
722-10	Dining Facility	5 - 12
724-11	BOQ	14 - 32
730-83	Chapel	6 - 13
		0.07 - 0.11 KW/seat
740-02	Location Exchange	NO STANDARD
740-20	Temporary Lodging	14 - 20
740-23	Commissary	21 - 24
740-25	Family Service Center	10 - 11
740-40	Bowling Alley	2.8 - 4.9 KW/alley
740-63	Enlisted Men's & Officers Clubs	16 - 17
740-74	Child Care Center	9 - 12
	Classrooms	8 - 13
	Computer Room	1.5 - 4.0
	Dispensaries	12 - 15
	Hospital Patient Rooms	12 - 15
	Married Personnel Quarters	14 - 34
	Recreation Rooms	10 - 12
	Shops (Precision Equipment)	12 - 13

Estimating Electrical Loads for Air Conditioning Systems

It is frequently necessary to estimate the power requirements for air conditioning systems when preparing a MILCON project and in other instances. For years, a rough rule of thumb was to use one kilowatt per 3.5Kw of cooling for any type system. Use of this rule neglects variation in cooling system efficiencies and the power consumption of auxiliaries such as fans and pumps.

7.10 Plumbing Fixture Count.

Floor Drains (All Sizes)	1/3	Fixture
Roof Drains (All Sizes)	1	Fixture
Floor Sink (All Sizes)	1/3	Fixture
Water Closet	1	Fixture
Lavatories	1	Fixture
Kitchen Sink	1	Fixture
Service Sink	1	Fixture
Bidets	1	Fixture
Electric Water Cooler	1	Fixture
Drinking Fountain	1/2	Fixture
Hand Wash Fountain (180)	3	Fixture
Hand Wash Fountain (360)	4	Fixture
Bathtub	1	Fixture
Water Heater	0	Fixture
Urinal	1	Fixture
Single Shower Fixture	1/2	Fixture
Prefab. Shower (incl drain & fix)	1	Fixture
Multi-head Shower (SS)	1	Fixture
Emergency Shower & Eye Wash	1	Fixture
Eye Wash	1/2	Fixture
Emergency Shower	1/2	Fixture
Dishwasher Connection	1/2	Fixture
Washing Machine Connection	1/2	Fixture
Garbage Disposal	1/4	Fixture
Rough-in Piping (HW, CW, Waste)	1/2	Fixture
Mop Sink	1	Fixture

The above table is to be used to determine number of fixtures for Standard System Descriptions, WBS 08 (.01,.02, .03).

7.11 Cover Sheet / Check List for 1391P

(not included at this time)

7.12 Size Adjustment Chart**PART I - FACILITIES OTHER THAN MILITARY FAMILY HOUSING**

MIL-HDBK-1010B

Size Relationship Ratio	Size Adjustment Factor	Size Relationship Ratio	Size Adjustment Factor	Size Relationship Ratio	Size Adjustment Factor	Size Relationship Ratio	Size Adjustment Factor
< 0.05	1.275	1.00	1.000	2.00	0.950	3.00	0.930
0.05	1.275	1.05	0.995	2.05	0.949	3.05	0.929
0.10	1.255	1.10	0.990	2.10	0.948	3.10	0.928
0.15	1.225	1.15	0.985	2.15	0.947	3.15	0.927
0.20	1.190	1.20	0.980	2.20	0.946	3.20	0.926
0.25	1.170	1.25	0.978	2.25	0.945	3.25	0.925
0.30	1.150	1.30	0.976	2.30	0.944	3.30	0.924
0.35	1.130	1.35	0.974	2.35	0.943	3.35	0.923
0.40	1.110	1.40	0.972	2.40	0.942	3.40	0.922
0.45	1.100	1.45	0.970	2.45	0.941	3.45	0.921
0.50	1.080	1.50	0.968	2.50	0.940	3.50	0.920
0.55	1.070	1.55	0.966	2.55	0.939	> 3.50	0.920
0.60	1.060	1.60	0.964	2.60	0.938		
0.65	1.050	1.65	0.962	2.65	0.937		
0.70	1.040	1.70	0.960	2.70	0.936		
0.75	1.030	1.75	0.958	2.75	0.935		
0.80	1.025	1.80	0.957	2.80	0.934		
0.85	1.020	1.85	0.955	2.85	0.933		
0.90	1.015	1.90	0.953	2.90	0.932		
0.95	1.010	1.95	0.952	2.95	0.931		

PART II - MILITARY FAMILY HOUSING**PART IIA: PROJECT
SIZE**

Number of Units	Size Adjustment Factor A
1 - 9	1.15
10 - 19	1.10
20 - 49	1.05
50 - 99	1.02
100 - 199	1.00
200 - 299	0.98
300 - 499	0.96
Over 499	0.95

**PART IIB: UNIT SIZE
(METRIC)**

Unit Size (Net m²)	Size Adjustment Factor B
55 - 69	1.05
70 - 78	1.03
79 - 88	1.01
89 - 97	1.00
98 - 106	0.99
107 - 116	0.98
117 - 125	0.97
Over 125	0.96

**PART IIB: UNIT SIZE
(ENGLISH)**

Unit Size (Net SF)	Size Adjustment Factor B
600 - 749	1.05
750 - 849	1.03
850 - 949	1.01
950 - 1049	1.00
1050 - 1149	0.99
1150 - 1249	0.98
1250 - 1349	0.97
Over 1349	0.96

Note 1: Multiply the appropriate Project Size Factor A by the appropriate Unit Size Factor B to determine the Size Adjustment Factor for Military Family Housing Projects.

7.13 Work Breakdown Structure - Subsystem Level

PRIMARY FACILITIES

01. SUBSTRUCTURE

01.01. Standard Foundations

- 01.01.01. Wall Foundations
- 01.01.02. Column Foundations & Pile Caps
- 01.01.9X. Other Standard Foundations

01.02. Special Foundation Conditions

- 01.02.01. Pile Foundations
- 01.02.02. Caissons
- 01.02.03. Underpinning
- 01.02.04. Dewatering
- 01.02.05. Raft Foundations
- 01.02.06. Pressure Injection Grouting
- 01.02.9X. Other Special Foundations

01.03. Slab on Grade

- 01.03.01. Standard Slab on Grade
- 01.03.02. Structural Slab on Grade
- 01.03.03. Inclined Slab on Grade
- 01.03.04. Trenches
- 01.03.05. Pits and Bases
- 01.03.06. Foundation Drainage
- 01.03.9X. Other Slab On Grade

01.04. Basement Excavation

- 01.04.01. Excavation for Basements
- 01.04.02. Structural Backfill and Compact.
- 01.04.03. Shoring
- 01.04.9X. Other Basement Excavation

01.05. Basement Walls

- 01.05.01. Basement Wall Construction
- 01.05.02. Moisture Protection
- 01.05.03. Basement Wall Insulation
- 01.05.04. Interior Skin
- 01.05.9X. Other Basement Walls

02. SUPERSTRUCTURE

02.01. Floor Construction

- 02.01.01. Structural Frame
- 02.01.02. Structural Interior Walls
- 02.01.03. Floor Decks and Slabs
- 02.01.04. Balcony Construction
- 02.01.05. Ramps
- 02.01.06. Floor Raceway Systems
- 02.01.9X. Other Floor Construction

02.02. Roof Construction

- 02.02.01. Structural Frame
- 02.02.02. Structural Interior Walls
- 02.02.03. Roof Decks and Slabs
- 02.02.04. Canopies
- 02.02.9X. Other Roof Systems

02.03. Stair Construction

- 02.03.01. Interior Stair Structure
- 02.03.02. Exterior Stair Structure
- 02.03.9X. Other Stair Construction

03. EXTERIOR CLOSURE

03.01. Exterior Walls

- 03.01.01. Exterior Skin
- 03.01.02. Insulation and Vapor Barrier
- 03.01.03. Interior Skin
- 03.01.04. Parapets
- 03.01.05. Exterior Louvers and Screens
- 03.01.06. Sun Control Devices (Exterior)
- 03.01.07. Balcony Walls and Handrails
- 03.01.08. Exterior Soffits
- 03.01.09. Exterior Fencing
- 03.01.9X. Other Exterior Walls

03.02. Exterior Windows

- 03.02.01. Windows
- 03.02.02. Storefronts
- 03.02.03. Curtain Walls
- 03.02.9X. Other Exterior Windows

03.03. Exterior Personnel Doors

- 03.03.01. Glazed Doors
- 03.03.02. Solid Doors
- 03.03.03. Revolving Doors
- 03.03.9X. Other Exterior Personnel Doors

03.04. Exterior Specialty Doors

- 03.04.01. Overhead Doors and Roll-up Doors
- 03.04.02. Hangar Doors
- 03.04.03. Blast Resistant Doors
- 03.04.04. Gates
- 03.04.9X. Other Special Doors

04. ROOFING

04.01. Roofing

- 04.01.01. Roof Coverings
- 04.01.02. Traffic Toppings & Paving Membr.
- 04.01.03. Roof Insulation and Fill
- 04.01.04. Flashing and Trim
- 04.01.05. Roofing Openings & Supports
- 04.01.06. Gutters and Downspouts
- 04.01.9X. Other Roofing

05. INTERIOR CONSTRUCTION

05.01. Partitions

- 05.01.01. Fixed Partitions
- 05.01.02. Demountable Partitions
- 05.01.03. Retractable Partitions
- 05.01.04. Interior Balustrades and Screens
- 05.01.05. Interior Windows
- 05.01.06. Glazed Partitions and Storefront
- 05.01.9X. Other Partitions

05.02. Interior Personnel Doors

- 05.02.01. Standard Interior Doors
- 05.02.02. Glazed Interior Doors
- 05.02.03. Fire Doors
- 05.02.04. Sliding and Folding Doors
- 05.02.9X. Other Interior Personnel Doors

05.03. Interior Specialty Doors

- 05.03.01. Overhead Doors
- 05.03.02. Gates
- 05.03.9X. Other Special Doors

05.04. Interior Specialties

- 05.04.01. Compartments, Cubicles and Toilet Partitions
- 05.04.02. Toilet and Bath Accessories
- 05.04.03. Chalkboards and Tack Boards
- 05.04.04. Identifying Devices

MIL-HDBK-1010B

- 05.04.05. Lockers
- 05.04.06. Shelving
- 05.04.07. Fire Extinguisher Cabinets
- 05.04.9X. Other Interior Specialties

05.05. Casework

- 05.05.01. Counters
- 05.05.02. Cabinets
- 05.05.03. Closets
- 05.05.9X. Other Casework

06. INTERIOR FINISHES

06.01. Wall Finishes

- 06.01.01. Concrete Wall Finishes
- 06.01.02. Plaster Wall Finishes
- 06.01.03. Gypsum Wallboard Finishes
- 06.01.04. Tile and Terrazzo Wall Finishes
- 06.01.05. Painting to Wall
- 06.01.06. Wall Coverings
- 06.01.07. Acoustical Tiles and Panels to Walls
- 06.01.08. Special Coatings to Walls
- 06.01.9X. Other Wall Finishes

06.02. Flooring and Floor Finishes

- 06.02.01. Tile Floor Finishes
- 06.02.02. Terrazzo Floor Finishes
- 06.02.03. Wood Flooring
- 06.02.04. Resilient Flooring
- 06.02.05. Carpeting
- 06.02.06. Masonry and Stone Flooring
- 06.02.07. Access Flooring
- 06.02.08. Painting and Staining Floors
- 06.02.9X. Other Floor Finishes

06.03. Ceiling and Ceiling Finishes

- 06.03.01. Exposed Concrete Finishes
- 06.03.02. Plaster Ceiling Finishes
- 06.03.03. Gypsum Wallboard Ceiling Finish
- 06.03.04. Acoustical Ceiling Tiles & Panel
- 06.03.05. Wood Ceilings
- 06.03.06. Painting and Staining Ceilings
- 06.03.07. Suspension Systems
- 06.03.08. Metal Strip Ceilings
- 06.03.9X. Other Special Ceilings & Ceiling

07. CONVEYING SYSTEMS

07.01. Elevators

- 07.01.01. General Construction Items
- 07.01.02. Passenger Elevators
- 07.01.03. Freight Elevators
- 07.01.9X. Other Elevators

07.02. Moving Stairs and Walks

- 07.02.01. Moving Stairs
- 07.02.02. Moving Walks
- 07.02.9X. Other Moving Stairs and Walks

07.03. Material Handling Systems

- 07.03.01. Conveyor Belt
- 07.03.02. Overhead Cranes
- 07.03.03. Lifts
- 07.03.04. Dumbwaiters
- 07.03.05. Chutes
- 07.03.06. Pneumatic Tube Systems
- 07.03.9X. Other Material Handling Systems

08. PLUMBING

08.01. Plumbing Fixtures

- 08.01.01. Waterclosets
- 08.01.02. Urinals
- 08.01.03. Lavatories
- 08.01.04. Sinks
- 08.01.05. Showers/Tubs
- 08.01.06. Drinking Fountains & Coolers
- 08.01.07. Other Fixtures
- 08.01.9X. Other Fixtures

08.02. Domestic Water Supply

- 08.02.01. Pipes and Fittings
- 08.02.02. Valves and Hydrants
- 08.02.03. Domestic Water Supply Equipment
- 08.02.04. Insulation & Identification
- 08.02.05. Specialties
- 08.02.9X. Other Domestic Water Supply

08.03. Sanitary Waste and Vent System

- 08.03.01. Waste Pipe and Fittings
- 08.03.02. Vent Pipe and Fittings
- 08.03.03. Floor Drains
- 08.03.04. Insulation & Identification
- 08.03.05. Other Sanitary Waste & Vent

08.04. Rainwater Drainage System

- 08.04.01. Pipe and Fittings
- 08.04.02. Roof Drains
- 08.04.03. Insulation & Identification
- 08.04.9X. Other Rainwater Drainage System

08.05. Plumbing Equipment

- 08.05.01. Domestic Water Equipment
- 08.05.02. Sanitary And Vent Equipment
- 08.05.03. Rainwater Drainage Equipment
- 08.05.9X. Other Special Plumbing Equipment

08.06. Special Plumbing Systems

- 08.06.01. Special Piping Systems
- 08.06.02. Acid Waste Systems
- 08.06.03. Interceptors
- 08.06.04. Pool Equipment
- 08.06.9X. Other Special Plumbing Systems

09. HVAC

09.01. Energy Supply

- 09.01.01. Oil Supply System
- 09.01.02. Gas Supply System
- 09.01.03. Coal Supply System
- 09.01.04. Steam Supply System (Cent Plnt)
- 09.01.05. Hot Water Supply System
(From Central Plant)
- 09.01.06. Solar Systems
- 09.01.07. Wind Energy Supply System
- 09.01.9X. Other Energy Supply

09.02. Heat Generating Systems

- 09.02.01. Steam Boilers
- 09.02.02. Hot Water Boilers
- 09.02.03. Furnaces
- 09.02.04. Fuel Fired Unit Heaters
- 09.02.05. Auxiliary Equipment
- 09.02.06. Equipment Thermal Insulation
- 09.02.9X. Other Heat Generating Systems

09.03. Cooling Generating Systems

- 09.03.01. Chilled Water Systems
- 09.03.02. Direct Expansion Systems
- 09.03.9X. Other Cooling Generating Systems

09.04. Distribution Systems

- 09.04.01. Air Distribution, Cooling and
Heating

MIL-HDBK-1010B

- 09.04.02. Steam Distribution Systems
- 09.04.03. Hot Water Distribution Systems
- 09.04.04. Change Over Distribution Systems
- 09.04.05. Glycol Distribution Systems
- 09.04.06. Chilled Water Distribution Sys.
- 09.04.07. Exhaust Systems
- 09.04.9X. Other Distribution Systems

09.05. Terminal and Package Units

- 09.05.01. Unit Ventilators
- 09.05.02. Unit Heaters
- 09.05.03. Fan Coil Units
- 09.05.04. Fin Tube Radiation
- 09.05.05. Electric Heating
- 09.05.06. Package Units
- 09.05.9X. Other Terminal And Package Units

09.06. Controls and Instrumentation

- 09.06.01. HVAC Controls
- 09.06.02. Instrument Panels
- 09.06.03. Instrument Air Compressors
- 09.06.04. Gas Purging Systems
- 09.06.9X. Other Controls & Instrumentation

09.07. Systems Testing and Balancing

- 09.07.01. Water Side Testing and Balancing - Heating And Cooling
- 09.07.02. Air Side Testing and Balance -Heating, Cooling & Exhaust Sys
- 09.07.03. HVAC Commissioning
- 09.07.9X. Other Syst. Testing & Balancing

09.08. Special Mechanical Systems

- 09.08.01. General Const. Items (Mechanical)
- 09.08.02. Refrigeration Systems
- 09.08.9X. Other Special Mechanical

10. FIRE PROTECTION SYSTEMS

10.01. Water Supply (Fire Protection)

- 10.01.01. Water Supply Equipment & Piping

10.02. Sprinklers

- 10.02.01. Sprinkler Heads and Release Devices.

10.03. Standpipe Systems

- 10.03.01. Standpipe Equipment and Piping

10.04. Fire Extinguishers

10.04.01. Fire Extinguishing Devices

10.05. Special Fire Protection Systems

10.05.01. Other special Fire Protection
Systems

11. ELECTRIC POWER AND LIGHTING

11.01. Service and Distribution

11.01.01. Main Transformers
11.01.02. Secondary
11.01.03. Main Switchboards
11.01.04. Interior Distribution Transformers
11.01.05. Panels
11.01.06. Enclosed Circuit Breakers
11.01.07. Motor Control Centers
11.01.9X. Other Service And Distribution

11.02. Lighting and Branch Wiring

11.02.01. Branch Wiring
11.02.02. Lighting Equipment
11.02.9X. Other Lighting And Branch Wiring

12. ELECTRICAL SYSTEMS

12.01. Communication, Security & Alarm Systems

12.01.01. Fire Alarm Systems
12.01.02. Nurse Call Systems
12.01.03. Telephone Systems
12.01.04. Public Address Systems
12.01.05. Intercommunication Systems
12.01.06. Clock and Program Systems
12.01.07. Television Systems
12.01.08. Security Systems
12.01.9X. Other Communication & Alarm Sys.

12.02. Special Electrical Systems

12.02.01. General Construction Items
12.02.02. Emergency Lighting and Power
12.02.03. Grounding Systems
12.02.04. Lighting Protection
12.02.05. Electric Heating
12.02.06. Energy Management Control Sys.
12.02.9X. Other Special Systems and Device

13. EQUIPMENT

13.01. Fixed and Moveable Equipment

- 13.01.01. Built-in Maintenance Equipment
- 13.01.02. Checkroom Equipment
- 13.01.03. Food Service Equipment
- 13.01.04. Vending Equipment
- 13.01.05. Waste Handling Equipment
- 13.01.06. Loading Dock Equipment
- 13.01.07. Parking Equipment
- 13.01.08. Misc. Common Fixed & Moveable Equipment
- 13.01.09. Warehouse Equipment
- 13.01.10. Medical Equipment
- 13.01.11. Laboratory Equipment
- 13.01.12. Mortuary Equipment
- 13.01.13. Auditorium and Stage Equipment
- 13.01.14. Registration Equipment
- 13.01.15. Library Equipment
- 13.01.16. Laundry Equipment
- 13.01.17. Security and Vault Equipment
- 13.01.9X. Other Spec. Fixed & Moveable Eqpt

14. FURNISHINGS

14.01. Furnishings

- 14.01.01. Modular Prefabricated Furniture
- 14.01.02. Artwork
- 14.01.03. Window Treatment
- 14.01.04. Seating
- 14.01.05. Rugs, Mats and Furnishing Access
- 14.01.06. Dining Room Furnishings
- 14.01.9X. Other Furnishings

15. SPECIAL CONSTRUCTION

15.01. Vaults

15.02. Interior Swimming Pools

15.03. Special Purpose Rooms

15.04. Pre-Engineered Buildings

15.05. Washracks

15.06. Exterior Utility Buildings

15.9X. Other Special Construction

16. SELECTIVE BUILDING DEMOLITION

16.01 Non-Hazardous Selective Building Demolition

- 16.01.01. Substructure & Superstructure
- 16.01.02. Exterior Closure
- 16.01.03. Roofing
- 16.01.04. Interior Construction & Finishes
- 16.01.05. Conveying Systems
- 16.01.06. Mechanical Systems
- 16.01.07. Electrical Systems
- 16.01.08. Equipment & Furnishings
- 16.01.9X. Other Non-Hazardous Selective Building Demolition

16.02. Hazardous Selective Building Demolition

- 16.02.01. Substructure & Superstructure
- 16.02.02. Exterior Closure
- 16.02.03. Roofing
- 16.02.04. Interior Construction & Finishes
- 16.02.05. Conveying Systems
- 16.02.06. Mechanical Systems
- 16.02.07. Electrical Systems
- 16.02.08. Equipment & Furnishings
- 16.02.9X. Other Hazardous Selective Building Demolition

16.9X. Other Selective Building Demolition

SUPPORTING FACILITIES

17. SITE PREPARATIONS

17.01. Site Clearing

- 17.01.01. Clearing
- 17.01.02. Tree Removal
- 17.01.03. Stump Removal
- 17.01.04. Chipping
- 17.01.05. Grubbing
- 17.01.06. Selective Thinning
- 17.01.07. Debris Disposal
- 17.01.9X. Other Site Clearing

17.02. Site Demolition & Relocation

- 17.02.01. Building Mass Demolition

- 17.02.02. Above Ground Site Demolition
- 17.02.03. Underground Site Demolition
- 17.02.04. Debris Disposal
- 17.02.05. Building Relocation
- 17.02.06. Utility Relocation
- 17.02.07. Fencing Relocation
- 17.02.9X. Other Site Demolition & Relocation

17.03. Site Earthwork

- 17.03.01. Grading
- 17.03.02. Common Excavation & Disposal
- 17.03.03. Rock Excavation & Disposal
- 17.03.04. Fill & Borrow
- 17.03.05. Compaction
- 17.03.06. Soil Stabilization
- 17.03.07. Slope Stabilization
- 17.03.08. Soil Treatment
- 17.03.09. Shoring
- 17.03.10. Temporary Dewatering
- 17.03.11. Temporary Erosion Control
- 17.03.9X. Other Site Earthwork

17.04. Site Cleanup

- 17.04.01. Site Cleanup
- 17.04.9X. Other Site Cleanup

17.9X. Other Site Preparation

- 17.9X.01. Site Cleanup

18. SITE IMPROVEMENTS

18.01. Roadways

- 18.01.01. Bases and Subbases
- 18.01.02. Drains, Inlets, Curbs & Gutters
- 18.01.03. Paved Surfaces
- 18.01.04. Marking & Signage
- 18.01.05. Guardrails & Barriers
- 18.01.06. Resurfacing
- 18.01.9X. Other Roadways

18.02. Parking Lots

- 18.02.01. Bases and Subbases
- 18.02.02. Drains, Curbs & Gutters
- 18.02.03. Paved Surfaces
- 18.02.04. Marking & Signage
- 18.02.05. Guardrails & Barriers
- 18.02.06. Resurfacing
- 18.02.9X. Other Parking Areas

18.03. Walks, Steps, Ramps & Terraces

- 18.03.01. Bases and Subbases
- 18.03.02. Drains, Curbs & Gutters
- 18.03.03. Paved Surfaces
- 18.03.04. Guardrails & Barriers
- 18.03.05. Resurfacing
- 18.03.9X. Other Walks, Steps, Ramps, & Terraces

18.04. Site Development

- 18.04.01. Fencing & Gates
- 18.04.02. Retaining Walls
- 18.04.03. Exterior Furnishings
- 18.04.04. Security Structures
- 18.04.05. Signage
- 18.04.06. Fountains & Pools
- 18.04.07. Playing Fields
- 18.04.08. Lined Stormwater Collection Pond and
other Stormwater Collection & Storage
Structures
- 18.04.9X. Miscellaneous Structures

18.05. Landscaping

- 18.05.01. Fine Grading & Soil Preparation
- 18.05.02. Erosion Control Measures
- 18.05.03. Top Soil & Planting Beds
- 18.05.04. Seeding & Sodding
- 18.05.05. Plantings
- 18.05.06. Planters
- 18.05.07. Irrigation Systems
- 18.05.9X. Other Landscaping

18.06. Special Construction

- 18.06.01. Bridges
- 18.06.02. Railroad Spur
- 18.06.9X. Other Special Construction

18.9X. Other Site Improvements

19. SITE CIVIL/MECHANICAL UTILITIES

19.01. Water Supply & Distribution Systems

- 19.01.01. Well Systems
- 19.01.02. Potable Water Distribution
- 19.01.03. Potable Water Storage
- 19.01.04. Fire Protection Water Distrib.
- 19.01.05. Fire Protection Water Storage
- 19.01.06. Non-Potable Water Distribution

MIL-HDBK-1010B

- 19.01.07. Pumping Stations
- 19.01.08. Packaged Water Treatment Plants
- 19.01.09. Trenchboxes
- 19.01.9X. Other Water Supply

19.02. Sanitary Sewer Systems

- 19.02.01. Sanitary Sewer Piping
- 19.02.02. Sanitary Sewer Manholes & Cleanouts
- 19.02.03. Lift Stations
- 19.02.04. Pack. Sanitary Sewer Treatment Plants
- 19.02.05. Septic Tanks
- 19.02.06. Drain Fields
- 19.02.07. Trenchboxes
- 19.02.9X. Other Sanitary Sewer

19.03. Storm Sewer Systems

- 19.03.01. Storm Sewer Piping
- 19.03.02. Storm Sewer Manholes
- 19.03.04. Culverts
- 19.03.05. Headwalls & Catch Basins
- 19.03.06. Erosion Control Measures
- 19.03.07. Trenchboxes
- 19.03.9X. Other Storm Sewer

19.04. Industrial Waste Systems

- 19.04.01. Industrial Waste Pipe
- 19.04.02. Manholes & Cleanouts
- 19.04.03. Lift Stations
- 19.04.04. Holding Tanks and Separators
- 19.04.05. Trenchboxes
- 19.04.9X. Other Industrial Waste

19.05. Heating Distribution Systems

- 19.05.01. Overhead Hot Water Systems
- 19.05.02. Overhead Steam Systems
- 19.05.03. Underground Hot Water Systems
- 19.05.04. Underground Steam Systems
- 19.05.05. Trenchboxes
- 19.05.9X. Other Heating

19.06. Cooling Distribution Systems

- 19.06.01. Overhead Cooling Systems
- 19.06.02. Underground Cooling Systems
- 19.06.03. Trenchboxes
- 19.06.9X. Other Cooling

19.07. Natural & Propane Gas Distribution Systems

- 19.07.01. Gas Distribution Piping
- 19.07.02. Gas Storage Tanks
- 19.07.03. Trenchboxes

19.07.9X. Other Gas Distribution

19.08. Building Fuel Distribution System

19.08.01. Fuel Distribution Piping
19.08.02. Fuel Storage Tanks
19.08.03. Fuel Dispensing Stations
19.08.04. Trenchboxes
19.08.9X. Other Fuel

19.9X. Other Civil/Mechanical Utilities

19.9X.01. Trench Boxes

20. SITE ELECTRICAL UTILITIES

20.01. Substations

20.01.01. Transformers
20.01.02. Switchgear, Voltage Regulators &
Bussbars
20.01.03. Overhead Electric Conductors
20.01.04. Towers, Poles, Crossarms & Insulators
20.01.05. Underground Electric Conductors
20.01.06. Ductbanks, Manholes & Handholes
20.01.07. Lightning Arresting Systems
20.01.08. Grounding Systems
20.01.9X. Other Substations

20.02. Exterior Electrical Distribution

20.02.01. Transformers
20.02.02. Switches, Controls & Devices
20.02.03. Overhead Electric Conductors
20.02.04. Towers, Poles, Crossarms & Insulators
20.02.05. Underground Electric Conductors
20.02.06. Ductbanks, Manholes, Handholes &
Raceways
20.02.07. Grounding Systems
20.02.08. Metering
20.02.9X. Other Electric Transmission &
Distribution

20.03. Exterior Lighting

20.03.01. Transformers
20.03.02. Overhead Electric Conductors
20.03.03. Towers, Poles, Crossarms & Insulators
20.03.04. Underground Electric Conductors
20.03.05. Ductbanks, Manholes & Handholes
20.03.06. Exterior Lighting Fixtures & Controls
20.03.07. Grounding Systems
20.03.08. Special Security Lighting System
20.03.9X. Other Area Lighting

20.04. Exterior Communications & Alarm Systems

- 20.04.01. Telephone Systems
- 20.04.02. Sound Systems
- 20.04.03. Fire Alarm Systems
- 20.04.04. Cable TV Systems
- 20.04.9X. Other Communication & Alarm

20.05. Exterior Security Sensors & TV Monitoring Systems

- 20.05.01. Cables & Wiring
- 20.05.02. Ductbanks, Manholes & Handholes
- 20.05.03. Towers, Poles & Stands
- 20.05.04. TV Cameras & Monitors
- 20.05.05. Grounding Systems
- 20.05.9X. Other Security Systems

20.06. Cathodic Protection

- 20.06.01. Sacrificial Anode System
- 20.06.9X. Other Cathodic Protection

20.9X. Other Electrical Utilities

Part 8 Appendix

8.1 Unit Cost Data for DoD Facilities

TABLE A1
UNIT COST DATA FOR DOD FACILITIES - METRIC UNITS
26 March 1997

FACILITY TYPE	REFERENCE SIZE GROSS m ²	(NOTES 1 AND 2) UNIT COST (\$ PER m ²)	
		FY 1999	FY 2000
1. SATELLITE COMMUNICATIONS CENTER	550	3660	3,741
2. AIRCRAFT OPERATION BUILDING (WITHOUT TOWER)	950	1518	1,551
3. AIRFIELD FIRE AND RESCUE STATION (DOES NOT INCLUDE CENTRAL ALARM SYSTEM)	750	1755	1,794
4. OPERATIONS BUILDINGS			
GENERAL PURPOSE	1,200	1216	1,243
HEADQUARTERS	1,000	1442	1,474
SQUADRON	1,100	1442	1,474
5. APPLIED INSTRUCTION BUILDINGS			
GENERAL INSTRUCTION	2,300	1281	1,309
HIGH TECH (AUTO-AID) TRAINING	2,300	1550	1,584
6. RESERVE FACILITIES			
CENTER	1,850	1216	1,243
VEHICLE MAINTENANCE	550	1130	1,155
7. HANGERS			
MAINTENANCE/ GENERAL PURPOSE	2,150	1281	1,309
HIGH BAY MAINTENANCE	3,250	1668	1,705
8. SHOPS			
VEHICLE MAINTENANCE, WHEEL	2,800	1238	1,265
VEHICLE MAINTENANCE, TRACK	2,300	1345	1,375
AIRCRAFT AVIONICS	2,150	1281	1,309
INSTALLATION MAINTENANCE	2,900	1087	1,111
PARACHUTE AND DINGHY	750	1496	1,529
A/C MACHINE SHOP	1,850	1206	1,233

TABLE A1
UNIT COST DATA FOR DOD FACILITIES - METRIC UNITS
26 March 1997

FACILITY TYPE	REFERENCE SIZE GROSS m ²	(NOTES 1 AND 2) UNIT COST (\$ PER m ²)	
		FY 1999	FY 2000
9. STORAGE FACILITIES			
COLD STORAGE WAREHOUSE/PROCESSING	1,000	1119	1,144
COLD STORAGE WAREHOUSE	550	1507	1,540
GENERAL PURPOSE WAREHOUSE - LOW BAY	3,700	667	682
GENERAL PURPOSE WAREHOUSE - HIGH BAY	5,600	700	715
GENERAL PURPOSE MAGAZINE	950	1625	1,661
HIGH EXPLOSIVE MAGAZINE	450	1841	1,882
10. DOD MEDICAL FACILITIES (NOTE 3)			
STATION HOSPITAL	NA	1808	1,848
REGIONAL MEDICAL CENTER	NA	2164	2,212
TROOP CLINIC	2,800	1507	1,540
OUTPATIENT CLINIC	2,800	1507	1,540
DENTAL CLINIC	1,400	1894	1,936
11. ADMINISTRATIVE FACILITIES (NOTE 4)			
MULTI-PURPOSE	2,300	1216	1,243
DATA PROCESSING AREA FACILITY (INCLUDES ADMIN AND STORAGE)	1,950	1550	1,584
COMMAND HEADQUARTERS BUILDING	3,700	1356	1,386
12. BARRACKS, DORMITORIES (NOTE 5) (NOT INCLUDE KITCHENETTE EQUIPMENT)	9,250	1324	1,353
13. UNACCOMPANIED OFFICERS QUARTERS (NOTE 5)	4,100	1281	1,309
14. MESS HALL ENLISTED (INCLUDES KITCHEN EQUIPMENT & INSTALLATION)	1,500	2088	2,134
15. FIRE STATION COMMUNITY	330	1410	1,441
16. CHAPEL CENTER	1,400	1518	1,551

TABLE A1
UNIT COST DATA FOR DOD FACILITIES - METRIC UNITS
26 March 1997

FACILITY TYPE	REFERENCE SIZE GROSS m ²	(NOTES 1 AND 2) UNIT COST (\$ PER m ²)	
		FY 1999	FY 2000
17. COMMISSARY (SALES STORE W/ OPERATIONAL EQUIPMENT)	7,900	1173	1,199
18. FAMILY SUPPORT CHILD DEVELOPMENT CENTER (NOTE 6)	1,400	1453	1,485
EDUCATION CENTER	930	1238	1,265
YOUTH CENTER	1,400	1345	1,375
FAMILY SERVICE CENTER	450	1249	1,276
19. FAMILY HOUSING (NOTE 7)	NA	829	847
CONUS	NA	850	869
20. PHYSICAL FITNESS TRAINING CENTER	1,850	1485	1,518
21. EXCHANGE STORES (W/ CAFETERIA AND SNACK BAR)	1,100	980	1,002
22. ENLISTED SERVICE CLUBS	1,500	1851	1,892
23. LIBRARIES	1,100	1109	1,133
24. RECREATION CENTERS	1,850	1098	1,122
25. BOWLING CENTERS (8 LANES W/ PIN SPOTTING EQUIPMENT AND AUTOMATIC SCORING DEVICE)	700	1518	1,551

TABLE A1
UNIT COST DATA FOR DOD FACILITIES - METRIC UNITS
26 March 1997

FACILITY TYPE	REFERENCE SIZE GROSS m ²	(NOTES 1 AND 2) UNIT COST (\$ PER m ²)	
		FY 1999	FY 2000
26. DEPENDENT SCHOOLS			
ELEMENTARY	NA	1012	1,034
JUNIOR HIGH/MIDDLE	NA	1044	1,067
HIGH SCHOOL	NA	1087	1,111
27. TEMPORARY LODGING FACILITIES	1,400	1130	1,155
GENERAL NOTES 1. THESE UNIT COSTS ARE FORECAST TO A MIDPOINT OF CONSTRUCTION OF 1 OCTOBER FOR THE RESPECTIVE FISCAL YEAR WITH AN AREA COST FACTOR (ACF) OF 1.00. UNIT COSTS DO NOT INCLUDE ALLOWANCES FOR CONSTRUCTION CONTINGENCIES AND SIOH. 2. THESE UNIT COSTS INCLUDE INSTALLED (BUILT-IN) BUILDING EQUIPMENT AND FURNISHINGS NORMALLY FUNDED WITH MILCON FUNDS. 3. UNIT COSTS FOR DOD MEDICAL FACILITIES INCLUDE CATEGORY A AND B EQUIPMENT, BUT DO NOT INCLUDE CATEGORY E AND F EQUIPMENT COSTS. 4. UNIT COSTS FOR ADMINISTRATIVE FACILITIES DO NOT INCLUDE PREWIRED WORKSTATIONS OR FURNITURE SYSTEMS. 5. UNIT COSTS FOR BARRACKS AND UNACCOMPANIED OFFICERS QUARTERS DO NOT INCLUDE FREE STANDING KITCHEN EQUIPMENT. 6. UNIT COSTS FOR CHILD DEVELOPMENT CENTERS DO NOT INCLUDE FREE-STANDING FOOD SERVICE EQUIPMENT OR PLAYGROUND AREA AND EQUIPMENT. 7. UNIT COSTS FOR FAMILY HOUSING ARE BASED ON NET AREA AND INCLUDE SPRINKLER COSTS WHICH ARE ESTIMATED AT APPROXIMATELY \$32 PER NET SQUARE METER (m ²).			

8.2 U. S. Area Cost Factors

TABLE B
AREA COST FACTOR INDEXES
 26 March 1997

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
ALABAMA		0.83
	MOBILE	0.82
	MONTGOMERY	0.84
	(A) ANNISTON ARMY DEPOT	0.81
	(A) FORT MCCLELLAN	0.82
	(A) FORT RUCKER	0.80
	(AF) MAXWELL AIR FORCE BASE	0.84
	(N) MOBILE AREA	0.82
	(A) REDSTONE ARSENAL	0.85
ALASKA		1.59
	ANCHORAGE	1.50
	FAIRBANKS	1.68
	(N) ADAK NAVAL STATION	2.40
	(AF) EIELSON AIR FORCE BASE	1.73
	(AF) ELMENDORF AIR FORCE BASE	1.55
	(A) FORT GREELY	1.87
	(A) FORT RICHARDSON	1.50
	(A) FORT WAINWRIGHT	1.73
	(AF) SHEMYA AIR FORCE BASE	2.46
	(AF) CLEAR AIR FORCE BASE	1.86
ARIZONA		0.95
	FLAGSTAFF	0.97
	TUSCON	0.93
	(AF) DAVIS MONTHAN AIR FORCE BASE	0.93
	(A) FORT HUACHUCA	0.97
	(AF) LUKE AIR FORCE BASE	0.96
	(A) NAVAJO ARMY DEPOT	0.95
	(N) YUMA MCAS	1.00
	(A) YUMA PROVING GROUND	1.00
ARKANSAS		0.83
	FORT SMITH	0.82
	PINE BLUFF	0.84
	(A) FORT CHAFFEE	0.81
	(AF) LITTLE ROCK AIR FORCE BASE	0.80
	(A) PINE BLUFF ARSENAL	0.84

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
CALIFORNIA		1.15
	SAN DIEGO	1.12
	SAN FRANCISCO	1.18
	(AF) BEALE AIR FORCE BASE	1.23
	(N) CAMP PENDLETON MARINE CORPS	1.10
	(N) CENTERVILLE BEACH	1.11
	(N) CHINA LAKE NAVAL WEAPONS CENTER	1.29
	(AF) EDWARDS AIR FORCE BASE	1.21
	(N) EL CENTRO NAVAL AIR FIELD	1.09
	(N) EL TORO	1.11
	(A) FORT HUNTER LIGGETT	1.28
	(A) FORT IRWIN	1.23
	(A) FORT ORD	1.13
	(N) LOS ANGELES AREA	1.11
	(AF) MARCH AIR FORCE BASE	1.14
	(AF) MCCLELLAN AIR FORCE BASE	1.08
	(N) MONTEREY AREA	1.11
	(A) OAKLAND ARMY BASE	1.17
	(N) PORT HUENEME AREA	1.05
	(A) RIVERBANK ARMY AMMO PLANT	1.09
	(A) SACRAMENTO ARMY DEPOT	1.05
	(A) SHARPE ARMY DEPOT	1.12
	(A) SIERRA ARMY DEPOT	1.44
	(N) STOCKTON AREA	1.04
	(AF) TRAVIS AIR FORCE BASE	1.23
	(AF) VANDENBERG AIR FORCE BASE	1.25
	(N) 29 PALMS MARINE CORPS BASE	1.29
COLORADO		1.02
	COLORADO SPRINGS	1.02
	DENVER	1.02
	(AF) AIR FORCE ACADEMY	1.02
	(AF) CHEYENNE MOUNTAIN	1.06
	(AF) FALCON AIR FORCE STATION	1.06
	(A) FITZSIMONS ARMY MED CENTER	1.03
	(A) FORT CARSON	1.12
	(AF) PETERSON AIR FORCE BASE	1.02
	(A) PUEBLO ARMY DEPOT	0.95
	(A) ROCKY MOUNTAIN ARSENAL	1.03
CONNECTICUT		1.12
	BRIDGEPORT	1.13
	NEW LONDON	1.11
	(N) NEW LONDON AREA	1.11
	(A) STRATFORD ENG PLANT	1.13

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
DELAWARE		1.08
	DOVER	1.06
	WILMINGTON	1.09
	(AF) DOVER AIR FORCE BASE	1.03
FLORIDA		0.90
	MIAMI	0.94
	PANAMA CITY	0.85
	(AF) CAPE CANAVERAL	0.96
	(AF) EGLIN AIR FORCE BASE	0.86
	(AF) HOMESTEAD AIR FORCE BASE	0.94
	(N) JACKSONVILLE AREA	0.90
	(N) KEY WEST NAVAL AIR STATION	1.08
	(AF) MCDILL AIR FORCE BASE	0.84
	(N) ORLANDO AREA	0.89
	(N) PANAMA CITY AREA	0.85
	(N) PENSACOLA AREA	0.88
	(AF) TYNDALL AIR FORCE BASE	0.85
GEORGIA		0.87
	ALBANY	0.80
	ATLANTA	0.93
	(N) ALBANY AREA	0.82
	(A) FORT BENNING	0.81
	(A) FORT GILLEM	0.93
	(A) FORT GORDON	0.85
	(A) FORT McPherson	0.93
	(A) FORT STEWART	0.83
	(N) KINGS BAY	0.92
	(AF) ROBINS AFB	0.82
HAWAII		1.47
	HONOLULU	1.43
	KANEOHE BAY	1.50
	(N) BARBERS POINT NAVAL AIR STA	1.50
	(N) BARKING SANDS	1.67
	(N) FORD ISLAND	1.64
	(A) FORT DERUSSY	1.43
	(A) FORT SHAFTER	1.45
	(AF) HICKMAN AIR FORCE BASE	1.43
	(N) KANEOHE MARINE CORPS AIR ST	1.50
	(N) PEARL HARBOR	1.45
	(N) POHAKULOA	1.77
	(A) SCHOFIELD BARRACKS	1.53
	(A) TRIPLER ARMY MEDICAL CENTER	1.43
	(A) WHEELER ARMY AIR FIELD	1.53

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
IDAHO		1.15
	BOISE	1.06
	MOUNTAIN HOME	1.23
	(AF) MOUNTAIN HOME AIR FORCE BASE	1.23
ILLINOIS		1.20
	BELLEVILLE	1.14
	CHICAGO	1.26
	(N) FOREST PARK (CHICAGO)	1.26
	(N) GLENVIEW (CHICAGO)	1.26
	(N) GREAT LAKES (NTC)	1.26
	(A) ROCK ISLAND ARSENAL	1.05
	(A) SAVANNAH ARMY DEPOT	1.08
	(AF) SCOTT AIR FORCE BASE	1.22
INDIANA		1.01
	INDIANAPOLIS	1.04
	LOGANSPOUT	0.98
	(N) CRANE NWSC	1.05
	(A) FORT BENJAMIN HARRISON	1.06
	(AF) GRISSOM AIR FORCE BASE	1.06
	(A) JEFFERSON PROVING GROUND	0.96
IOWA		1.07
	BURLINGTON	1.14
	DES MOINES	1.00
	(A) IOWA ARMY AMMO PLANT	1.21
KANSAS		0.94
	MANHATTAN	0.94
	WICHITA	0.94
	(A) FORT LEAVENWORTH	1.08
	(A) FORT RILEY	1.06
	(A) KANSAS ARMY AMMO PLANT	0.92
	(AF) MCCONNELL AIR FORCE BASE	0.94
KENTUCKY		0.92
	LEXINGTON	0.91
	LOUISVILLE	0.93
	(A) FORT CAMPBELL	1.02
	(A) FORT KNOX	0.96
	(A) LEXINGTON/BLUE GRASS AD	0.98
	(N) LOUISVILLE NAVAL AIR STATION	0.93

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
LOUISIANA	NEW ORLEANS	0.90
	SHREVEPORT	0.93
	(AF) BARKSDALE AIR FORCE BASE	0.86
	(A) FORT POLK	0.86
	(A) LOUISIANA ARMY AMMO PLANT	0.94
	(A) NEW ORLEANS ARMY BASE	0.85
MAINE		0.93
	BANGOR	1.02
	PORTLAND	1.07
	(N) BRUNSWICK AREA	0.97
	(N) CUTLER WINTER HARBOR	0.95
MARYLAND		0.95
	BALTIMORE	0.87
	LEXINGTON PARK	0.87
	(A) ABERDEEN PROVING GROUND	0.86
	(AF) ANDREWS AIR FORCE BASE	0.87
	(N) ANNAPOLIS	0.96
	(N) BETHESDA	0.87
	(N) CHELTONHAM (DC)	0.96
	(N) CHESAPEAKE BEACH	0.96
	(A) FORT DETRICK	0.89
	(A) FORT GEORGE G MEADE	0.87
	(A) FORT RITCHIE	0.87
	(A) HARRY DIAMOND LAB	0.87
	(N) INDIAN HEAD	0.96
	(N) PATUXENT RIVER AREA	0.88
	(N) THURMONT	0.86
MASSACHUSETTS		0.87
	BOSTON	1.19
	FITCHBURG	1.24
	(A) ARMY MAT & MECH LAB	1.14
	(A) FORT DEVENS	1.12
	(AF) HANSCOM AIR FORCE BASE	1.27
MICHIGAN		1.20
	DETROIT	1.16
	MARQUETTE	1.15
	(A) DETROIT ARSENAL	1.16
	(AF) K I SAWYER AIR FORCE BASE	1.15
		1.16
MINNESOTA		1.24
	DULUTH	1.22
	MINNEAPOLIS	1.26

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
MISSISSIPPI	BILOXI	0.84
	COLUMBUS	0.84
	(AF) COLUMBUS AIR FORCE BASE	0.83
	(N) GULFPORT AREA	0.83
	(AF) KEESLER AIR FORCE BASE	0.85
	(N) MERIDIAN NAVAL AIR STATION	0.83
		0.88
MISSOURI		0.99
	KANSAS CITY	1.04
	SEDALIA	0.93
	(A) FORT LEONARD WOOD	1.11
	(A) LAKE CITY ARMY AMMO PLANT	1.06
	(A) ST LOUIS ARMY AMMO PLANT	1.10
	(AF) WHITEMAN AIR FORCE BASE	1.04
MONTANA		1.20
	BILLINGS	1.17
	GREAT FALLS	1.23
	(AF) MALMSTROM AIR FORCE BASE	1.16
NEBRASKA		0.93
	GRAND ISLAND	0.88
	OMAHA	0.97
	(A) CORNHUSKER ARMY AMMO PLANT	0.86
	(AF) OFFUTT AIR FORCE BASE	0.97
NEVADA		1.10
	HAWTHORNE	1.14
	LAS VEGAS	1.05
	(N) FALLON	1.11
	(A) HAWTHORNE ARMY AMMO PLANT	1.13
	(AF) NELLIS AIR FORCE BASE	1.06
NEW HAMPSHIRE		1.06
	CONCORD	1.07
	PORTSMOUTH	1.05
	(N) PORTSMOUTH AREA	1.05
NEW JERSEY		1.15
	NEWARK	1.16
	TRENTON	1.14
	(N) BAYONNE MOT	1.15
	(N) EARLE	1.15
	(A) FORT DIX	1.11
	(A) FORT MONMOUTH	1.10
	(AF) MCGUIRE AIR FORCE BASE	1.14
	(A) PICATINNY ARSENAL	1.20

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
NEW MEXICO		1.02
	ALAMOGORDO	1.02
	ALBUQUERQUE	1.01
	(AF) CANNON AIR FORCE BASE	1.03
	(AF) HOLLOMAN AIR FORCE BASE	0.98
	(AF) KIRTLAND AIR FORCE BASE	0.96
	(A) WHITE SANDS MR	1.03
NEW YORK		1.18
	ALBANY	1.05
	NEW YORK CITY	1.30
	(A) FORT DRUM	1.12
	(AF) GRIFFISS AIR FORCE BASE	1.04
	(N) NIAGARA	1.20
	(AF) PLATTSBURGH AIR FORCE BASE	1.07
	(A) SENECA ARMY DEPOT	1.08
	(N) STATEN ISLAND	1.24
	(A) U S MILITARY ACADEMY	1.23
	(A) WATERVLIET ARSENAL	1.00
NORTH CAROLINA		0.84
	FAYETTEVILLE	0.83
	GREENSBORO	0.84
	(N) CAMP LEJEUNE AREA	0.90
	(N) CHERRY	0.88
	(A) FORT BRAGG	0.86
	(N) NEW RIVER	0.91
	(AF) POPE AIR FORCE BASE	0.86
	(AF) SEYMOUR JOHNSON AFB	0.82
	(A) SUNNY POINT	0.91
NORTH DAKOTA		1.03
	GRAND FORKS	0.98
	MINOT	1.08
	(AF) MINOT AIR FORCE BASE	1.08
OHIO		0.97
	DAYTON	0.96
	YOUNGSTOWN	0.97
	(A) RAVENNA ARMY AMMO PLANT	0.96
	(AF) WRIGHT-PATTERSON AFB	0.96

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
OKLAHOMA		0.90
	LAWTON	0.92
	OKLAHOMA CITY	0.88
	(AF) ALTUS AIR FORCE BASE	1.00
	(A) FORT SILL	0.95
	(A) MCALESTER ARMY AMMO PLANT	0.86
	(AF) TINKER AIR FORCE BASE	0.88
	(AF) VANCE AIR FORCE BASE	0.92
OREGON		1.11
	PENDLETON	1.16
	PORTLAND	1.05
	(A) UMATILLA ARMY DEPOT	1.19
PENNSYLVANIA		1.04
	PHILADELPHIA	1.09
	PITTSBURGH	0.99
	(A) CARLISLE BARRACKS	0.97
	(A) INDIANTOWN GAP MR	1.04
	(A) LETTERKENNY ARMY DEPOT	1.02
	(N) MECHANICSBURG AREA	0.97
	(A) NEW CUMBERLAND ARMY DEPOT	0.97
	(N) PHILADELPHIA AREA	1.09
	(A) TOBYHANNA ARMY DEPOT	1.06
	(N) WARMINSTER	1.05
RHODE ISLAND		1.07
	NEWPORT	1.09
	PROVIDENCE	1.04
SOUTH CAROLINA		0.87
	CHARLESTON	0.88
	COLUMBIA	0.86
	(N) BEAUFORT AREA	0.97
	(AF) CHARLESTON AIR FORCE BASE	0.88
	(A) FORT JACKSON	0.86
	(AF) SHAW AIR FORCE BASE	0.86
SOUTH DAKOTA		0.99
	RAPID CITY	1.00
	SIOUX FALLS	0.97
	(AF) ELLSWORTH AIR FORCE BASE	1.02
TENNESSEE		0.85
	CHATTANOOGA	0.83
	MEMPHIS	0.87
	(AF) ARNOLD AIR FORCE BASE	0.94
	(A) VOLUNTEER ORDINANCE WORKS	0.81
	(N) MEMPHIS NAVAL AIR STATION	0.96

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
TEXAS	SAN ANGELO	0.82
	SAN ANTONIO	0.81
	(AF) BROOKS AIR FORCE BASE	0.82
	(A) CAMP BULLIS	0.82
	(N) CORPUS CHRISTI AREA	0.92
	(N) DALLAS	0.94
	(AF) DYESS AIR FORCE BASE	0.86
	(A) FORT BLISS	0.95
	(A) FORT HOOD	0.85
	(A) FORT SAM HOUSTON	0.82
	(AF) GOODFELLOW AIR FORCE BASE	0.81
	(AF) KELLY AIR FORCE BASE	0.82
	(N) KINGSVILLE AREA	0.93
	(AF) LACKLAND AIR FORCE BASE	0.82
	(AF) LAUGHLIN AIR FORCE BASE	1.01
	(A) LONE STAR ARMY AMMO PLANT	0.85
	(A) LONGHORN ARMY AMMO PLANT	0.85
	(AF) RANDOLPH AIR FORCE BASE	0.82
	(A) RED REVER ARMY DEPOT	0.85
	(AF) REESE AIR FORCE BASE	0.87
	(AF) SHEPPARD AIR FORCE BASE	0.94
	(N) INGLESIDE NAVAL STATION	0.95
UTAH		0.97
	OGDEN	0.98
	SALT LAKE CITY	0.96
	(A) DUGWAY PROVING GROUND	1.04
	(A) FORT DOUGLAS	0.96
	(AF) HILL AIR FORCE BASE	0.98
VERMONT	(A) TOOEELE ARMY DEPOT	1.06
		0.88
	BURLINGTON	0.86
VIRGINIA	MONTPELIER	0.89
		0.90
	NORFOLK	0.91
	RICHMOND	0.88
	(N) DAHLGREN	0.92
	(A) FORT A P HILL	0.88
	(A) FORT BELVOIR	0.96
	(A) FORT EUSTIS	0.91
	(A) FORT LEE	0.91
	(A) FORT MONROE	0.91
	(A) FORT MYER	0.96
	(A) FORT PICKETT	0.94
	(A) FORT STORY	0.91
	(AF) LANGLEY AIR FORCE BASE	0.91

PART I - U.S. LOCATIONS

STATE	ACF LOCATION	INDEX
VIRGINIA (Cont)		0.90
	(N) QUANTICO	0.96
	(A) RADFORD ARMY AMMO PLANT	0.95
	(A) VINT HILL FARMS	0.92
WASHINGTON		1.10
	SPOKANE	1.09
	TACOMA	1.10
	(N) BREMERTON	1.09
	(N) EVERETT	1.09
	(AF) FAIRCHILD AIR FORCE BASE	1.05
	(A) FORT LEWIS	1.10
	(N) INDIAN HEAD	1.09
	(AF) MCCHORD AIR FORCE BASE	1.10
	(N) SILVERDALE	1.06
	(N) WHIDBEY ISLAND	1.09
	(A) YAKIMA FIRING RANGE	1.04
WEST VIRGINIA		0.96
	BLUEFIELD	0.96
	CHARLESTON	0.96
	(N) SUGAR GROVE	1.40
WISCONSIN		1.10
	MADISON	1.09
	MILWAUKEE	1.11
	(A) BADGER ARMY AMMO PLANT	1.16
	(A) FORT MCCOY	1.15
WYOMING		0.98
	CASPER	0.97
	CHEYENNE	0.98
	(AF) F E WARREN AIR FORCE BASE	0.98
WASHINGTON DC		0.96
	(F) BOLLING AIR FORCE BASE	0.96
	(A) FORT MCNAIR	0.96
	(A) WALTER REED ARMY MED CENTER	0.96

8.3 OCONUS Area Cost Factors**AREA COST FACTOR INDEXES**

26 March 1997

PART II - OCONUS LOCATIONS

<u>NATION</u>	<u>LOCATION</u>	<u>ACF INDEX</u>	<u>CURRENCY EXCHANGE</u>	<u>REMARKS</u>
ANTIGUA		1.77	2.7	ANTIGUA \$/US \$
	ANTIGUA	1.77		
AUSTRALIA		1.49	1.26	AUSTRALIAN \$/US \$
	DARWIN	1.84		
	PERTH	1.36		
	SYDNEY	1.32		
	WOOMERA AS	1.43		
AZORES		1.24	157.77	PORTUGUESE ESCUDO/US \$
	LAJES	1.24		
BAHAMAS		1.67	1	BAHAMIAN \$/US \$
	ANDROS ISLAND	1.67		
BAHRAIN		1.56	0.377	BAHRAIN DINAR/US \$
	BAHRAIN	1.56		
BELGIUM		1.49	32.24	BELGIUM FRANC/US \$
	BRUSSELS	1.49		
BERMUDA		1.55	1	BERMUDA \$/US \$
	BERMUDA	1.55		
CANADA		1.31	1.37	CANADIAN \$/US \$
	ARGENTIA/ NEWFOUNDLAND	1.31		
CUBA		1.51	1	US \$
	GUANTANAMO	1.51		
DIEGO GARCIA		2.43	1	US \$
	DIEGO GARCIA	2.43		
EGYPT		1.27	3.39	EGYPTIAN POUND/US \$
	CAIRO	1.27		

PART II - OCONUS LOCATIONS

<u>NATION</u>	<u>LOCATION</u>	<u>ACF INDEX</u>	<u>CURRENCY EXCHANGE</u>	<u>REMARKS</u>
GERMANY		1.62	1.564	DEUTSCHE MARK/US \$
	FRANKFURT	1.72		
	KAISERSLAUTERN	1.68		
	TRIER	1.47		
GREECE		0.83	245.2	DRACHMA/US \$
	ATHENS	0.83		
GREENLAND		3.52	5.983	DANISH KRONE/US \$
	GODHAAB (WUUK)	3.52		
GUAM		2.01	1	US \$
	GUAM	2.01		
ICELAND		3.20	71.12	KRONA/US \$
	REYKJAVIK	3.20		
ITALY		1.28	1,534.20	LIRA/US \$
	ISOLA DI CAPO RIZZUTO	1.27		
	LA MADDALENA	1.32		
	NAPLES	1.28		
	SIGNOLLA	1.29	0	
	VENICE	1.23		
JAPAN		1.69	114.55	YEN/US \$
	ATSUGI	1.79		
	MISAWA	1.65		
	OKINAWA	1.59		
	TOKYO	1.79		
	IWAKUNI	1.62		
JOHNSTON ATOLL		2.13	1	US \$
	JOHNSTON ATOLL	2.13		
KOREA		1.14	831.5	WON/US \$
	CHINHAE	1.14		
	DMZ ZONE AREA	1.20		
	KUNSAN	1.14		
	OSAN	1.14		
	SEOUL	1.08		
KWAJALEIN		2.20	1	US \$
	KWAJALEIN	2.20		

PART II - OCONUS LOCATIONS

<u>NATION</u>	<u>LOCATION</u>	<u>ACF INDEX</u>	<u>CURRENCY EXCHANGE</u>	<u>REMARKS</u>
MIDWAY ISLAND		1.99	1 US \$	
	MIDWAY ISLAND	1.99		
MOROCCO		1.18	9.45 DIRHAM/US \$	
	CASABLANCA	1.18		
NETHERLANDS		1.26	1.7546 GUILDER/US \$	
	OSS	1.26		
NEW ZEALAND		2.46	1.44 NEW ZEALAND \$/US \$	
	WELLINGTON	2.46		
OMAN		1.37	0.385 RILOMANI/US \$	
	RUWI	1.37		
PANAMA		1.08	1 US \$	
	PANAMA CITY	1.08		
PHILIPPINES		0.69	26.33 PHILIPPINE PESO/US \$	
	MANILA	0.68		
	SUBIC BAY	0.69		
PUERTO RICO		1.05	1 US \$	
	SAN JUAN	1.05		
SEYCHELLES ISLAND		2.23	1 US \$	
	SEYCHELLES ISLAND	2.23		
SPAIN		1.12	131.5 PESETA/US \$	
	ROTA	1.12		
TURKEY		0.87	103250.00 TURKEY LIRA/US \$	
	ANKARA	0.86		
	INCIRLIK	0.87		
UNITED KINGDOM		1.33	0.6396 BRITISH POUND/US \$	
	LONDON	1.35		
	MANCHESTER	1.27		
	ST MAWGAN	1.33		
	EDZELL, SCOTLAND	1.36		

8.4 NAVFAC Cost Escalation Index (MARCH, 1997)

Fiscal	% Increase											
Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep (FY)
1986	2441	2446	2439	2440	2446	2447	2458	2479	2493	2499	2498	2504
1987	2511	2511	2511	2515	2510	2518	2523	2524	2525	2536	2557	2565
1988	2569	2564	2589	2574	2576	2586	2591	2592	2595	2538	2611	2612
1989	2612	2616	2617	2619	2613	2616	2620	2621	2626	2631	2640	2668
1990	2672	2675	2679	2673	2674	2684	2684	2697	2725	2725	2721	2729
1991	2728	2730	2719	2719	2716	2726	2736	2723	2733	2757	2792	2785
1992	2786	2791	2784	2780	2779	2799	2809	2828	2838	2845	2854	2857
1993	2867	2873	2875	2886	2886	2916	2976	3071	3066	3038	3014	3009
1994	3016	3029	3046	3071	3106	3116	3127	3125	3115	3107	3109	3116
1995	3116	3109	3110	3112	3111	3103	3100	3096	3095	3114	3121	3109
1996	3117	3131	3128	3127	3131	3135	3148	3161	3178	3190	3218	3239
1997	3277	3295	3302	3323	3324	3316	3322 p	3328 p	3333 p	3339 p	3345 p	3351 p
1998	3357 p	3363 p	3369 p	3374 p	3380 p	3386 p	3392 p	3398 p	3404 p	3410 p	3416 p	3422 p
1999	3428 p	3434 p	3440 p	3446 p	3452 p	3458 p	3464 p	3470 p	3476 p	3482 p	3488 p	3495 p
2000	3501 p	3507 p	3513 p	3519 p	3525 p	3531 p	3538 p	3544 p	3550 p	3556 p	3562 p	3569 p
2001	3575 p	3581 p	3587 p	3594 p	3600 p	3606 p	3613 p	3619 p	3625 p	3632 p	3638 p	3644 p
2002	3651 p	3657 p	3664 p	3670 p	3676 p	3683 p	3689 p	3696 p	3702 p	3709 p	3715 p	3722 p
2003	3728 p	3735 p	3741 p	3748 p	3754 p	3761 p	3767 p	3774 p	3781 p	3787 p	3794 p	3801 p

$$\text{Escalation Factor} = \frac{\text{Index of the "escalated to" date}}{\text{Index of the "escalated from" date}}$$

Historical indices are based upon the Engineering News Record Building.

All indices are based upon fiscal year rates.

Projected indices are based on official OASD projected rates as follows:

<u>Fiscal Year</u>	<u>% Per Year</u>	<u>% Per Month</u>
1997	2.10	0.175
1998	2.10	0.175
1999	2.10	0.175
2000	2.10	0.175
2001	2.10	0.175
2002	2.10	0.175
2003	2.10	0.175

For more information contact Mr. Mohsen Athari, NAVFAC Code 152, DSN 221 Commercial (703) 325-0451.

8.5 Supporting Facility Guidance Cost

PRICE INCLUDES CONTRACTOR OVERHEAD AND PROFIT ESCALATED TO APRIL 1/ ACF = 1.0

CODE	DESCRIPTION	U/M	TOTAL COST		
			FY 99	FY 00	FY 01
01.02 LAND PILING					
CB-BC	Treated wood piling 12.9, (40') to 15.24m (50') long 300m (12") butt 175m (7") tip 5.44kg (12 lb) creosote	M	45.46	46.47	47.50
CD-AB	Piling prestressed conc 250mm (10" sq), more than 18.3m (60 LF) long, truck delivery	M	46.97	48.02	49.08
CD-CB	Piling prestressed conc 300m (12" sq), more than 18.3m (60 LF) long, truck delivery	M	61.73	63.11	64.50
CD-BQ	Pile test to 200 tons	EA	5,200.00	5,345.00	5,435.00
17.02 DEMOLITION					
BE-BB	Clear & grub medium dense areas w/disposal	HA	12,827.00	13,114.00	13,403.00
BB-EA	Demolition of masonry building complete w/disposal	M3	8.40	8.56	8.78
BB-EB	Demolition of wood frame bldg complete w/disposal	M3	7.40	9.05	7.75
BB-EE	Demolition of steel frame bldg complete w/disposal	M3	9.20	9.40	9.60
BC-AB	Removal of bituminous paving up to 76mm (3") thick w/disposal	M2	7.91	8.09	8.27
BC-AD	Removal of 150mm (6") thick non-reinforced concrete pavement w/disposal	M2	17.77	18.17	18.57
BC-AJ	Removal of 200mm (8") thick non reinforced concrete pavement w/disposal	M2	11.25	11.50	11.75
BC-JA	Removal of 275mm (11") thick non reinforced concrete pavement w/disposal	M2	28.00	28.65	29.25
BC-AL	Removal of conc sidewalk 100mm (4") thick w/disposal	M2	11.29	11.54	11.79
BC-BF	Removal of concrete curb & gutter	M	13.08	13.38	13.67
17.03 BORROW					
BG-BC	Borrow fill in place at Sewells Point Area from Willoughby borrow pit	M3	17.71	18.10	18.50
BG-BL	Borrow fill in place at Cherry Pt/Camp Lejeune from station borrow pit	M3	20.90	21.37	21.84
BG-BJ	Borrow fill in place from commercial Tidewater pit 48.3km (30 miles) round trip	M3	23.99	24.53	25.07
BG-BK	Borrow fill in place from commercial Tidewater pit 32.2km (20 miles) round trip	M3	20.90	21.37	21.84
18.01 ROADS					
BW-AH	Stone aggregate base 150mm (6") thick	M2	7.86	8.04	8.22
BW-AJ	Stone aggregate base 200mm (8") thick	M2	10.41	10.64	10.87
DF-DD	Asphalt paving 40mm (1-1/2") overlay	M2	6.40	6.54	6.68
DF-DE	Asphalt paving 50mm (2") overlay	M2	7.91	8.09	8.27
DB-BD	Single bituminous surface treatment	M2	1.90	1.94	1.98
DB-BE	Double bituminous surface treatment	M2	2.78	2.84	2.90
DF-FF	Slurry seal	M23.69	3.78	3.86	
DC-EC	Conc paving non-reinf 35 Mpa (5000 psi) 150mm (6") thick	M2	39.33	40.21	41.10
CODE	DESCRIPTION	U/M	TOTAL COST		

MIL-HDBK-1010B

			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
DC-EE	Conc paving non-reinf 35 Mpa (5000 psi) 200mm (8") thick	M2	49.80	50.91	52.03
DC-EG	Conc paving non-reinf 35 Mpa (5000 psi) 250mm (10") thick	M2	60.87	62.23	63.60
DC-EI	Conc paving non-reinf 35 Mpa (5000 psi) 300mm (12") thick	M2	72.50	74.10	75.70
DF-EA	Inlaid pavement lane line markings 100mm (4") wide	M	6.75	6.90	7.05
DF-AA	Painting 100mm (4") lines on pavement	M	1.01	1.03	1.05
EA-C	Concrete curb 150m x 450mm (6x18) cast-in-place	M	30.29	30.97	31.65
EA-E	Concrete curb & gutter cast-in-place	M	46.20	47.23	48.27
EA-F	Concrete valley gutter cast-in-place	M2	54.42	55.64	56.86

18.02 PARKING

BW-AH	Stone aggregate base 150mm (6") thick	M2	7.86	8.04	8.22
BW-AJ	Stone aggregate base 200mm (8") thick	M2	10.41	10.64	10.87
DF-DD	Asphalt paving 40mm (1-1/2") overlay	M2	6.40	6.54	6.68
DF-DE	Asphalt paving 50mm (2") overlay	M2	7.91	8.09	8.27
DB-BD	Single bituminous surface treatment	M2	1.90	1.94	1.98
DB-BE	Double bituminous surface treatment	M2	2.78	2.84	2.90
DF-FF	Slurry seal	M2	3.69	3.78	3.86
DF-AA	Painting 100mm (4") lines on pavement	M	1.01	1.03	1.05
DF-EA	Inlaid pavement lane line markings 100mm (4") wide	M	6.41	6.55	6.70
EA-C	Concrete curb 150m x 450mm (6x18) cast-in-place	M	30.29	30.97	31.65
EA-E	Concrete curb & gutter cast-in-place	M	46.20	47.23	48.27
EA-F	Conc valley gutter cast-in-place	M2	54.42	55.64	56.86
EA-G	Precast conc parking bumpers 150mm x 250mm x 1.83mm (6"x10"x6") incl dowels	EA	39.51	40.39	41.28

18.02 AIRCRAFT PAVING

BW-AH	Stone aggregate base 150mm (6") thick	M2	7.86	8.04	8.22
BW-AJ	Stone aggregate base 200mm (8") thick	M2	10.41	10.64	10.87
DF-DD	Asphalt paving 40mm (1-1/2") overlay	M2	6.40	6.54	6.68
DF-DE	Asphalt paving 50mm (2") overlay	M2	7.91	8.09	8.27
DB-BD	Single bituminous surface treatment	M2	1.90	1.94	1.98
DB-BE	Double bituminous surface treatment	M2	2.78	2.84	2.90
DF-FF	Slurry seal	M2	3.69	3.78	3.86
DC-EC	Conc paving non-reinf 35 Mpa (5000 psi) 150mm (6") thick	M2	39.33	40.21	41.10
DC-EE	Conc paving non-reinf 35 Mpa (5000 psi) 200mm (8") thick	M2	49.80	50.91	52.03
DC-EG	Conc paving non-reinf 35 Mpa (5000 psi) 250mm (10") thick	M2	60.87	62.23	63.60
DC-EI	Conc paving non-reinf 35 Mpa (5000 psi) 300mm (12") thick	M2	72.50	74.10	75.70
DF-AA	Painting 100mm (4") lines on pavement	M	1.01	1.03	1.05
DF-EA	Inlaid pavement lane line markings 100mm (4") wide	M	6.41	6.55	6.70

18.03 SIDEWALKS

EA-D	Conc sidewalks 100mm (4") cast-in-place no base	M2	37.14	37.97	38.81
------	---	----	-------	-------	-------

CODE	DESCRIPTION	U/M	TOTAL COST		
------	-------------	-----	------------	--	--

MIL-HDBK-1010B

			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
18.04 FENCING					
CI-AC	Chain link fence 9 ga galv steel 1.22m (4') high w/3 strand barbwire	M	35.80	36.60	37.40
CI-AE	Chain link fence 9 ga galv steel 1.83m (6') high w/3 strand barbwire	M	52.17	53.33	54.51
CI-AF	Chain link fence 9 ga galv steel 2.13m (7') high w/3 strand barbwire	M	58.37	59.68	60.99
CI-AG	Chain link fence 9 ga galv steel 2.44m (8') high w/3 strand barbwire	M	65.85	67.33	68.81
CI-CC	Gate chain link 9 ga galv steel 1.22m (4') high w/gate posts & barbwire	M	178.00	182.00	186.00
CI-CE	Gate chain link 9 ga galv steel 1.83m (6') high w/gate posts & barbwire	M	222.00	227.00	232.00
CI-CF	Gate chain link 9 ga galv steel 2.13m (7') high w/gate posts & barbwire	M	242.00	247.00	253.00
CI-CG	Gate chain link 9 ga galv steel 2.44m (8') high w/gate posts & barbwire	M	268.00	274.00	280.00
18.05 LANDSCAPING					
DV-AA	100mm (4") topsoil from piles on site w/seed, fertilize lime, & fine grade	M2	1.92	1.96	2.01
19.01 WATER DISTRIBUTION					
DF-DJ	50mm (2") bituminous paving for pipe trench w/ 300mm (12") base (incl removal)	M2	35.17	35.96	36.75
DC-EZ	150mm (6") conc pavement for pipe trench with 150mm (6") base (incl removal)	M2	82.62	84.47	86.33
DJ-LA	Fire hydrant standard 3 way post type w/ 150mm (6") valve and thrust block	EA	2,843.00	2,906.00	2,970.00
DJ-AE	100mm (4") 90 deg bend CI MJ	EA	161.00	164.00	168.00
DJ-AI	150mm (6") 90 deg bend CI MJ	EA	212.00	217.00	222.00
DJ-AM	200mm (8") 90 deg bend CI MJ	EA	252.00	258.00	264.00
DJ-AQ	250mm (10") 90 deg bend CI MJ	EA	338.00	346.00	354.00
DJ-AU	300mm (12") 90 deg bend CI MJ	EA	437.00	447.00	457.00
DJ-BA	100mm (4") PVC water pipe AWWA C-900 Class 150 w/excav backfill & compaction	M	23.48	24.01	24.54
DJ-BB	150mm (6") PVC water pipe AWWA C-900 Class 150 w/excav backfill & compaction	M	32.54	33.27	34.00
DJ-BC	200mm (8") PVC water pipe AWWA C-900 Class 150 w/excav backfill & compaction	M	55.49	56.73	57.98
DJ-BD	250mm (10") PVC water pipe AWWA C-900 Class 150 w/excav backfill & compaction	M	74.81	76.48	78.17
DJ-BE	300mm (12") PVC water pipe AWWA C-900 Class 150 w/excav backfill & compaction	M	94.91	97.03	99.17
QL-JE	25mm (1")Type K copper pipe w/ .91m (3') deep trenching, backfill & compaction	M	19.73	20.17	20.61
QL-JM	40mm (1-1/2") Type K copper pipe w/ .91m (3') deep trenching, backfill & compaction	M	26.87	27.47	28.08
QL-KA	50mm (2") Type K copper pipe w/ .91m (3') deep trenching, backfill & compaction	M	35.63	36.42	37.23
DJ-LN	100m (4") tapping saddle tap size to 50mm (2")	EA	111.00	113.00	115.00
CODE	DESCRIPTION	U/M	TOTAL COST		

MIL-HDBK-1010B

			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>	
DJ-LO	150mm (6") tapping saddle tap size to 50mm (2")	EA	131.00	134.00	137.00	
DJ-LP	200mm (8") tapping saddle tap size to 50mm (2")	EA	145.00	148.00	151.00	
DJ-LQ	250mm (10") tapping saddle tap size to 50mm (2")	EA	168.00	172.00	176.00	
DJ-LR	300mm (12") tapping saddle tap size to 50mm (2")	EA	198.00	202.00	206.00	
DJ-LT	100mm x 100mm (4" x 4") tapping sleeve, 100mm (4") tapping valve & 100mm (4") tapped hole in pipe	EA		1,454.00	1,487.00	1,519.00
DJ-LV	150mm x 150mm (6" x 6") tapping sleeve, 150mm (6") tapping valve & 150mm (6") tapped hole in pipe	EA		1,976.00	2,020.00	2,065.00
DJ-LY	200mm x 200mm (8" x 8") tapping sleeve, 200mm (8") tapping valve & 200mm (8") tapped hole in pipe	EA	2,558.00	2,615.00	2,673.00	
DJ-LYD	250mm x 250mm (10" x 10") tapping sleeve, 250mm (10") tapping valve & 250mm (10") tapped hole in pipe	EA	4,113.00	4,205.00	4,298.00	
DJ-LYI	300mm x 300mm (12" x 12") tapping sleeve, 300mm (12") tapping valve & 300mm (12") tapped hole in pipe	EA	5,323.00	5,441.00	5,561.00	
DJ-FB	100mm (4") MJ gate valve with box	EA	614.00	628.00	642.00	
DJ-FC	150mm (6") MJ gate valve with box	EA	714.00	730.00	746.00	
DJ-FD	200mm (8") MJ gate valve with box	EA	993.00	1,015.00	1,037.00	
DJ-FE	250mm (10") MJ gate valve with box	EA	1,425.00	1,457.00	1,489.00	
DJ-EF	300mm (12") MJ gate valve with box	EA	1,829.00	1,870.00	1,912.00	

19.02 SANITARY SEWERS

DP-KA	Precast 1.22m (48") dia manhole 1.52m (5') deep w/frame & cover (incl poured invert)	EA	1,786.00	1,826.00	1,866.00	
DP-KB	Precast 1.22m (48") dia manhole 2.44m (8') deep w/frame & cover (incl poured invert)	EA	1,979.00	2,023.00	2,068.00	
DF-DJ	50mm (2") bituminous paving for pipe trench w/ 300mm (12") base (incl removal)	M2	35.17	35.96	36.75	
DC-EZ	150mm (6") conc paving for pipe trench with 150mm (6") base (incl removal)	M2	82.62	84.47	86.33	
DP-EC	100mm (4") exterior sewer cleanout	EA	450.00	460.00	470.00	
DP-ED	150mm (6") exterior sewer cleanout	EA	469.00	479.00	490.00	
DP-EE	200mm (8") exterior sewer cleanout	EA	498.00	509.00	520.00	
DP-DA	100mm (4") PVC sewer pipe ASTM 3034, SDR-35 w/excav, backfill & compaction	M	24.05	24.59	25.13	
DP-DB	150mm (6") PVC sewer pipe ASTM 3034, SDR-35 w/excav, backfill & compaction	M	29.69	30.35	31.02	
DP-DC	200mm (8") PVC sewer pipe ASTM 3034, SDR-35 w/excav, backfill & compaction	M	40.53	41.43	42.34	
DP-DD	250mm (10") PVC sewer pipe ASTM 3034, SDR-35 w/excav, backfill & compaction	M	57.94	59.23	60.54	
DP-DE	300mm (12") PVC sewer pipe ASTM 3034, SDR-35 w/excav, backfill & compaction	M	71.02	72.61	74.21	

19.03 STORM DRAINAGE

CG-BA	300mm (12") RCP Class III storm drainage 1.22m (4 ft) deep w/excav, backfill & compact	M	57.27	58.55	59.84	
CG-BB	375mm (15") RCP Class III storm drainage 1.22m (4 ft) deep w/excav, backfill & compact	M	75.55	77.24	78.94	
CG-BC	450mm (18") RCP Class III storm drainage 1.52m (5 ft) deep w/excav, backfill & compaction	M	101.00	104.00	106.00	
CG-BE	600mm (24") RCP Class III storm drainage 1.52m (5 ft) deep w/excav, backfill & compaction	M	142.00	146.00	149.00	

<u>CODE</u>	<u>DESCRIPTION</u>	<u>U/M</u>	<u>TOTAL COST</u>			
-------------	--------------------	------------	-------------------	--	--	--

MIL-HDBK-1010B

			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
CG-BG	750mm (30") RCP Class III storm drainage 1.52m (5 ft) deep w/excav, backfill & compaction	M	195.00	199.00	204.00
CG-BH	900mm (36") RCP Class III storm drainage 1.52m (5 ft) deep w/excav, backfill & compaction	M	266.00	272.00	278.00
CG-MW	Precast 1.22m (48") dia manhole 1.52m (5') deep w/frame & cover	EA	2,490.00	2,545.00	2,602.00
CG-OA	Precast 1.22m (48") dia manhole 2.44m (8') deep w/frame & cover	EA	3,381.00	3,457.00	3,533.00
CG-MN	Standard catch basin 1.52m (5 ft) deep	EA	2,064.00	2,110.00	2,156.00
CG-OH	Curb inlet max depth 2.44m (8' 4") throat width, 300mm (12") to 900mm (30 ") pipe w/excav & backfill	EA	5,313.00	5,431.00	5,551.00
DF-DJ	50mm (2") bituminous paving for pipe trench w/ 300mm (12") base (incl removal)	M2	35.17	35.96	36.75
DC-EZ	150mm (6") concrete paving for pipe trench w/150mm (6") base (incl removal)	M2	82.62	84.47	86.33

19.05 HEAT DISTRIBUTION

For areas with unstable soil conditions increase unit prices by 20%.

DK-1AA	250mm (10") steam & 150mm (6") condensate heat distribution piping aboveground	M	1,018.00	1,041.00	1,063.00
DK-3AA	200mm (8") steam & 100mm (4") condensate heat distribution piping aboveground	M	886.00	906.00	926.00
DK-4AA	150mm (6") steam & 100mm (4") condensate heat distribution piping aboveground	M	798.00	814.00	834.00
DK-5AA	100mm (4") steam & 65mm (2.5") condensate heat distribution piping aboveground	M	686.00	703.00	719.00
DK-7AA	75mm (3") steam & 50mm (2") condensate heat distribution piping aboveground	M	650.00	667.00	680.00
DK-9AA	65mm (2.5") steam & 50mm (2") condensate heat distribution piping aboveground	M	657.00	670.00	686.00
DK-92A	50mm (2") steam & 50mm (2") condensate heat distribution piping aboveground	M	663.00	680.00	696.00
DK-94A	50mm (2") steam & 25mm (1") condensate heat distribution piping aboveground	M	640.00	653.00	670.00
DK-97A	25mm (1") steam & 25mm (1") condensate heat distribution piping aboveground	M	719.00	735.00	752.00

19.08 FUEL STORAGE

Underground tanks for hazardous waste oil storage tanks increase cost by 120%

QV-BF	Underground oil storage tank 2100L (550 gal) fiberglass double wall (incl excav)	L	10.36	10.59	10.82
QV-BG	Underground oil storage tank 3800L (1000 gal) fiberglass double wall (incl excav)	L	6.43	6.57	6.72
QV-BH	Underground oil storage tank 9500L (2500 gal) fiberglass double wall (incl excav)	L	3.26	3.33	3.40
QV-BI	15,000L (4000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	2.37	2.43	2.48
QV-BJ	23,000L (6000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.79	1.83	1.87

<u>CODE</u>	<u>DESCRIPTION</u>	<u>U/M</u>	<u>TOTAL COST</u>		
			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>

MIL-HDBK-1010B

QV-BK	30,000L (8000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.49	1.52	1.56
QV-BL	38,000L (10000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.38	1.41	1.44
QV-BM	45,500L (12000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.32	1.35	1.38
QV-BN	57,000L (15000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.31	1.34	1.37
QV-BO	76,000L (20000 gal) underground fiberglass fuel oil tank double wall (incl excav)	L	1.15	1.17	1.20

20.01 ELECTRICAL SUBSTATION

NOTE: Transformers are priced using 5KV Primary.
For 15KV Primary add 15%.
For 35KV Primary add 80%.

YC#C1	15KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	6,594.00	6,742.00	6,890.00
YC#C10	25KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	7,786.00	7,960.00	8,136.00
YC@C11	37.5KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	8,011.00	8,190.00	8,370.00
YC#C12	50KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	8,291.00	8,476.00	8,663.00
YC@C13	75KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	9,356.00	9,565.00	9,776.00
YC@C14	100KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	10,271.00	10,501.00	10,732.00
YC@C15	167KVA 1PH pad mtd xfmr w/conc pad & grnd'g	EA	10,681.00	10,920.00	11,161.00
YC@C16	75KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	14,676.00	15,004.00	15,334.00
YC@C17	112KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	15,456.00	15,801.00	16,149.00
YC@C18	150KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	16,370.00	16,736.00	17,105.00
YC@C19	225KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	18,573.00	18,988.00	19,406.00
YC@C20	300KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	19,178.00	19,607.00	20,039.00
YC@C21	500KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	23,105.00	23,621.00	24,141.00
YC@C22	750KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	26,889.00	27,490.00	28,095.00
YC@C23	1000KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	30,641.00	31,326.00	32,016.00
YC@C24	1500KVA 3PH pad mtd xfmr w/conc pad & grnd'g	EA	38,576.00	39,438.00	40,307.00
VU-1	1, 1PH 10KVA xfmr w/term cutouts arresters 50mm (2") 12.19m (40') pole w/guy	EA	5,655.00	5,781.00	5,909.00
VU-15	1, 1PH 15KVA xfmr w/term cutouts arresters 50mm (2") 12.19m (40') pole w/guy	EA	5,655.00	5,781.00	5,909.00
VU-25	1, 1PH 25KVA xfmr w/term cutouts arresters 50mm (2") 12.19m (40') pole w/guy	EA	5,683.00	5,810.00	5,938.00

20.02 ELECTRICAL DISTRIBUTION

Note: Normal duct size is 100mm (4"). For 35KV circuit use 125mm (5") duct
Note: For quantities less than 100M (200 LF) add 20%; less than 125M (100 LF) add 50%

WK-G	4-1/C #2 THW str al. w/1-1/C#8 CU ground secondary w/termination	M	13.15	13.44	13.74
WK-I	4-1/C #1/0 THW str al. w/1-1/C#6 CU ground secondary w/termination	M	18.32	18.73	19.14
WK-J	4-1/C #2/0 THW str al. w/1-1/C#4 CU ground secondary w/termination	M	22.18	22.67	23.17
WK-K	4-1/C #4/0 THW str al. w/1-1/C#2 CU ground secondary w/termination	M	29.15	29.80	30.46

CODE	DESCRIPTION	U/M	TOTAL COST		
			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>

MIL-HDBK-1010B

WK-250	4-1/C 250 MCM THW str al. w/1-1/C#2 CU ground secondary w/termination	M	31.74	32.45	33.16
WK-500	4-1/C 500 MCM THW str al. w/1-1/C#1/0 CU ground secondary w/termination	M	52.77	53.95	55.14
WK-750	4-1/C 750 MCM THW str al. w/1-1/C#1/0 CU ground secondary w/termination	M	69.88	71.44	73.02
VF-G	4-1/C #2 CU USE wire 600V w/1-1/C#8 CU ground secondary w/termination	M	22.21	22.71	23.21
VF-I	4-1/C #1/0 CU USE wire 600V w/1-1/C#6 CU ground secondary w/termination	M	33.98	34.74	35.51
VF-J	4-1/C #2/0 CU USE wire 600V w/1-1/C#4 CU ground secondary w/termination	M	41.03	41.95	42.87
VF-L	4-1/C #4/0 CU USE wire 600V w/1-1/C#2 CU ground secondary w/termination	M	57.40	58.68	59.98
VF-250	4-1/C 250 MCM CU USE wire 600V w/1-1/C#2 CU ground secondary w/termination	M	72.30	73.91	75.54
VF-500	4-1/C 500 MCM CU USE wire 600V w/1-1/C#1/0 CU grd. secondary w/termination	M	127.00	129.00	132.00
VG-E	3-1/C #4 AWG CU XLP 5KV shielded cable primary w/o termination	M	44.69	45.68	46.69
VG-G	3-1/C #2 AWG CU XLP 5KV shielded cable primary w/o termination	M	53.61	54.81	56.02
VG-I	3-1/C #1/0 AWG CU XLP 5KV shielded cable primary w/o termination	M	59.21	60.54	61.87
VG-J	3-1/C #2/0 AWG CU XLP 5KV shielded cable primary w/o termination	M	61.26	62.63	64.01
VG-L	3-1/C #4/0 AWG CU XLP 5KV shielded cable primary w/o termination	M	80.68	82.49	84.30
VG-250	3-1/C 250 MCM AWG CU XLP 5KV shielded cable primary w/o termination	M	103.00	105.00	107.00
VG-500	3-1/C 500 MCM AWG CU XLP 5KV shielded cable primary w/o termination	M	158.00	161.00	165.00
VH-G	3-1/C #2 AWG CU XLP 15KV shielded cable primary w/o termination	M	58.64	59.95	61.27
VH-H	3-1/C #1 AWG CU XLP 15KV shielded cable primary w/o termination	M	64.21	65.65	67.09
VH-I	3-1/C #1/0 AWG CU XLP 15KV shielded cable primary w/o termination	M	75.79	77.48	79.19
VH-J	3-1/C #2/0 AWG CU XLP 15KV shielded cable primary w/o termination	M	83.80	85.68	87.56
VH-L	3-1/C #4/0 AWG CU XLP 15KV shielded cable primary w/o termination	M	110.00	113.00	115.00
VH-250	3-1/C 250 MCM AWG CU XLP 15KV shielded cable primary w/o termination	M	130.00	133.00	136.00
VH-500	3-1/C 500 MCM AWG CU XLP 15KV shielded cable primary w/o termination	M	192.00	196.00	200.00
VI-B47	Cable termination size no. 2 thru 4/0 0-15KV porcelain	EA	342.00	350.00	357.00
VI-47A	Cable termination size 250 MCM thru 500 MCM 0-15KV porcelain	EA	459.00	469.00	479.00
VI-47B	Cable termination size 500 MCM thru 750 MCM 0-15KV porcelain	EA	666.00	681.00	696.00
VL-012	Duct bank 1 way 53mm (2") grs duct w/exca & backfill does not incl pave remvl	M	33.41	34.16	34.91

CODE	DESCRIPTION	U/M	TOTAL COST		
			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
VL-013	Duct bank 1 way 78mm (3") grs duct w/exca & backfill	M	56.53	57.79	59.07

MIL-HDBK-1010B

VL-014	does not incl pave remvl Duct bank 1 way 103mm (4") grs duct w/exca & backfill	M	78.80	80.57	82.34
VL-015	does not incl pave remvl Duct bank 1 way 129mm (5") grs duct w/exca & backfill	M	139.00	142.00	146.00
VL-016	does not incl pave remvl Duct bank 1 way 155mm (6") grs duct w/exca & backfill	M	192.00	197.00	201.00
VL-022	does not incl pave remvl Duct bank 2 way 53mm (2") grs duct w/exca & backfill	M	63.10	64.51	65.94
VL-023	does not incl pave remvl Duct bank 2 way 78mm (3") grs duct w/exca & backfill	M	109.00	112.00	114.00
VL-024	does not incl pave remvl Duct bank 2 way 103mm (4") grs duct w/exca & backfill	M	153.00	157.00	160.00
VL-025	does not incl pave remvl Duct bank 2 way 129mm (5") grs duct w/exca & backfill	M	273.00	279.00	286.00
VL-026	does not incl pave remvl Duct bank 2 way 155mm (6") grs duct w/exca & backfill	M	381.00	388.00	397.00
VL-032	does not incl pave remvl Duct bank 3 way 53mm (2") grs duct w/exca & backfill	M	92.56	94.63	96.71
VL-033	does not incl pave remvl Duct bank 3 way 78mm (3") grs duct w/exca & backfill	M	161.00	165.00	168.00
VL-034	does not incl pave remvl Duct bank 3 way 103mm (4") grs duct w/exca & backfill	M	227.00	232.00	237.00
VL-035	does not incl pave remvl Duct bank 3 way 129mm (5") grs duct w/exca & backfill	M	407.00	417.00	427.00
VL-036	does not incl pave remvl Duct bank 3 way 155mm (6") grs duct w/exca & backfill	M	568.00	578.00	591.00
VL-042	does not incl pave remvl Duct bank 4 way 53mm (2") grs duct w/exca & backfill	M	119.00	122.00	124.00
VL-043	does not incl pave remvl Duct bank 4 way 78mm (3") grs duct w/exca & backfill	M	194.00	199.00	203.00
VL-044	does not incl pave remvl Duct bank 4 way 103mm (4") grs duct w/exca & backfill	M	296.00	302.00	309.00
VL-045	does not incl pave remvl Duct bank 4 way 129mm (5") grs duct w/exca & backfill	M	535.00	548.00	562.00
VL-046	does not incl pave remvl Duct bank 4 way 155mm (6") grs duct w/exca & backfill	M	749.00	765.00	781.00
VN-012	does not incl pave remvl Duct bank 1 way 50mm (2") PVC duct w/exca & backfill	M	18.85	19.28	19.70
VN-013	does not incl pave remvl Duct bank 1 way 75mm (3") PVC duct w/exca & backfill	M	23.42	23.94	24.47
VN-014	does not incl pave remvl Duct bank 1 way 100mm (4") PVC duct w/exca & backfill	M	29.92	30.59	31.27
VN-015	does not incl pave remvl Duct bank 1 way 125mm (5") PVC duct w/exca & backfill	M	38.75	39.61	40.49
VN-016	does not incl pave remvl Duct bank 1 way 150mm (6") PVC duct w/exca & backfill	M	48.54	49.63	50.72
VN-022	does not incl pave remvl Duct bank 2 way 50mm (2") PVC duct w/exca & backfill	M	34.15	34.92	35.68
VN-023	does not incl pave remvl Duct bank 2 way 75mm (3") PVC duct w/exca & backfill	M	42.44	43.39	44.34
VN-024	does not incl pave remvl Duct bank 2 way 100mm (4") PVC duct w/exca & backfill	M	54.92	56.15	57.38

CODE	DESCRIPTION	U/M	TOTAL COST		
			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
VN-025	Duct bank 2 way 125mm (5") PVC duct w/exca & backfill	M	71.79	73.40	75.01

MIL-HDBK-1010B

VN-026	does not incl pave remvl Duct bank 2 way 150mm (6") PVC duct w/exca & backfill	M	91.92	93.98	96.05
VN-032	does not incl pave remvl Duct bank 3 way 50mm (2") PVC duct w/exca & backfill	M	49.15	50.25	51.35
VN-033	does not incl pave remvl Duct bank 3 way 75mm (3") PVC duct w/exca & backfill	M	61.29	62.66	64.04
VN-034	does not incl pave remvl Duct bank 3 way 100mm (4") PVC duct w/exca & backfill	M	80.01	81.80	83.60
VN-035	does not incl pave remvl Duct bank 3 way 125mm (5") PVC duct w/exca & backfill	M	105.00	108.00	110.00
VN-036	does not incl pave remvl Duct bank 3 way 150mm (6") PVC duct w/exca & backfill	M	136.00	139.00	142.00
VN-042	does not incl pave remvl Duct bank 4 way 50mm (2") PVC duct w/exca & backfill	M	60.45	61.80	63.17
VN-043	does not incl pave remvl Duct bank 4 way 75mm (3") PVC duct w/exca & backfill	M	75.89	77.58	79.29
VN-044	does not incl pave remvl Duct bank 4 way 100mm (4") PVC duct w/exca & backfill	M	99.54	102.00	105.00
VN-045	does not incl pave remvl Duct bank 4 way 125mm (5") PVC duct w/exca & backfill	M	133.00	136.00	139.00
VN-046	does not incl pave remvl Duct bank 4 way 150mm (6") PVC duct w/exca & backfill	M	174.00	178.00	181.00
VN-062	does not incl pave remvl Duct bank 6 way 50mm (2") PVC duct w/exca & backfill	M	87.12	89.07	91.03
VN-063	does not incl pave remvl Duct bank 6 way 75mm (3") PVC duct w/exca & backfill	M	110.00	112.00	115.00
VN-064	does not incl pave remvl Duct bank 6 way 100mm (4") PVC duct w/exca & backfill	M	145.00	148.00	152.00
VN-065	does not incl pave remvl Duct bank 6 way 125mm (5") PVC duct w/exca & backfill	M	194.00	198.00	202.00
VN-066	does not incl pave remvl Duct bank 6 way 150mm (6") PVC duct w/exca & backfill	M	256.00	261.00	267.00
VN-082	does not incl pave remvl Duct bank 8 way 50mm (2") PVC duct w/exca & backfill	M	114.00	117.00	119.00
VN-083	does not incl pave remvl Duct bank 8 way 75mm (3") PVC duct w/exca & backfill	M	141.00	144.00	147.00
VN-084	does not incl pave remvl Duct bank 8 way 100mm (4") PVC duct w/exca & backfill	M	190.00	194.00	198.00
VN-085	does not incl pave remvl Duct bank 8 way 125mm (5") PVC duct w/exca & backfill	M	254.00	260.00	266.00
VN-086	does not incl pave remvl Duct bank 8 way 150mm (6") PVC duct w/exca & backfill	M	338.00	345.00	355.00
VN-122	does not incl pave remvl Duct bank 12 way 50mm (2") PVC duct w/exca & backfill	M	166.00	170.00	174.00
VN-123	does not incl pave remvl Duct bank 12 way 75mm (3") PVC duct w/exca & backfill	M	210.00	215.00	219.00
VN-124	does not incl pave remvl Duct bank 12 way 100mm (4") PVC duct w/exca & backfill	M	279.00	285.00	291.00
VN-125	does not incl pave remvl Duct bank 12 way 125mm (5") PVC duct w/exca & backfill	M	378.00	384.00	394.00
VN-126	does not incl pave remvl Duct bank 12 way 150mm (6") PVC duct w/exca & backfill	M	499.00	512.00	522.00

CODE	DESCRIPTION	U/M	TOTAL COST		
			<u>FY 99</u>	<u>FY 00</u>	<u>FY 01</u>
VN-162	Duct bank 16 way 50mm (2") PVC duct w/exca & backfill	M	219.00	224.00	229.00

MIL-HDBK-1010B

	does not incl pave remvl				
VN-163	Duct bank 16 way 75mm (3") PVC duct w/exca & backfill	M	276.00	282.00	289.00
	does not incl pave remvl				
VN-164	Duct bank 16 way 100mm (4") PVC duct w/exca & backfill	M	368.00	378.00	384.00
	does not incl pave remvl				
VN-165	Duct bank 16 way 125mm (5") PVC duct w/exca & backfill	M	496.00	509.00	519.00
	does not incl pave remvl				
VN-166	Duct bank 16 way 150mm (6") PVC duct w/exca & backfill	M	660.00	676.00	689.00
	does not incl pave remvl				
VN-15	15KV feeder w/4 way 100mm (4") DB, 4/0 CP grd, (3-6'x8'x6'D) MHS & 3-250 MCM cab w/spl	M	257.00	263.00	269.00
VN-35	35KV feeder w/4 way 6" DB, 4/0 CP grd, 3-9'x12'x6'D MHS & 3-500 MCM cab w/spl	M	261.00	267.00	272.00
VJH2PC	Handhole 1.2 X 1.2 X .9 (4'X4'X3')	EA	5,510.00	5,675.00	5,850.00
VJ#912	Manhole 2.7 X 3.6 X 1.9 (9'X12'X6'5")	EA	12,525.00	12,900.00	12,290.00
VJP4PC	Power Manhole 1.8 X 1.8 X 1.9 (6'x6'x6'6")	EA	9,800.00	10,090.00	10,390.00
VJS4PC	Signal Manhole 1.2 X 1.2 X 1.5 (6'x6'x6'6")	EA	8,000.00	8,245.00	8,490.00

8.6 Success Estimate**A--SUMMARY REPORT**

SUBMITTAL: FINAL
 SOFTWARE VERSION: SUCCESS 3.1
 REPORT WRITER VERSION: R&R 6.0
 C:\SC30\SYSTEM\NAVFA01.RP5 REPORT REVISION 20 JANUARY 1998

CONSTRUCTION CONTRACT: N62470-99-B-9999
 DATABASE USED: CES/JPB95
 PRINTING DATE: 20 January 1998
 Page No. 1
 ESTIMATE NAME: SAMPLE 1010B

PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS
 ESTIMATOR: H.G.Wells
 PROJECT SIZE: 2,500.00 SF
 CONSTRUCTION FUNDS AVAILABLE: 150 USD
 CURRENCY: DOLLARS

CAT CODE: 101-11
 UIC: N62863
 PROJECT #: P-123
 DATE OF ESTIMATE: 01/01/97
 BID DATE: FEBRUARY, 1997

WBS CODE	DESCRIPTION	COST/WBS BASED ON	COST/ WBS UNIT	TOTAL MARKED UP COSTS				
		2,500SF		MATL	LABOR	EQUIP	OTHER1	TOTAL
SAMPLE 1010B ESTIMATE , PROJECT TOTALS								
								428,000
	PROJECT SUBTOTALS			143,833	198,801	22,614	63,000	428,249
<u>BASE BID</u>		171.30/SF	<u>12012@ \$35.65/SF</u>	<u>143,833</u>	<u>198,801</u>	<u>22,614</u>	<u>63,000</u>	<u>428,249</u>
	*** NOTE: INCLUDES DISTRIBUTED COST ITEMS.							
	---FIRST BUILDING--M1	67.28/SF	4004@ \$42.01/SF	48,109	52,098	4,997	63,000	168,204
	*** Note: Level above 01 substructure, "First Building"							
	---SECOND BUILDING--M2	40.78/SF	4004@ \$25.46/SF	46,781	50,131	5,036	0	101,948
	*** NOTE: Building type is CMU with EIFS							
	---THIRD BUILDING--M3	42.53/SF	4004@ \$26.55/SF	48,944	52,309	5,073	0	106,326
	---UNIT PRICE ITEMS	17.23/SF	2@ \$21537.62/EA	0	35,992	7,083	0	43,075
	---ADDITIVES, BASE BID	3.48/SF	3@ \$2898.63/EA	0	8,271	425	0	8,696

WARNING: BASE BID EXCEEDS AUTHORIZED CONSTRUCTION FUNDS BY 428,099 DOLLARS. CONTACT THE PROJECT MANAGER.

Success "A" Summary Report

MIL-HDBK-1010B

B--SYSTEM REPORT
 SUBMITTAL: FINAL
 SOFTWARE VERSION: SUCCESS 3.1
 REPORT WRITER VERSION: R&R 6.0
 C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 20 JANUARY 1998

CONSTRUCTION CONTRACT: N62470-99-B-9999
 DATABASE USED: CES/UPB95
 PRINTING DATE: 01/20/1998
 Page No. 1
 ESTIMATE NAME: SAMPLE 1010B

PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS
 ESTIMATOR: H.G.Wells
 PROJECT SIZE: 2,500.00 SF
 CONSTRUCTION FUNDS AVAILABLE: 150 USD
 CURRENCY: DOLLARS

CAT CODE: 101-11
 UIC: N62863
 PROJECT #: P-123
 DATE OF ESTIMATE: 01/01/97
 BID DATE: FEBRUARY, 1997

WBS CODE	DESCRIPTION	COST/PROJECT UOM BASED ON 2,500SF	COST/ WBS UNIT	TOTAL MARKED UP COSTS						
				MATL	LABOR	EQUIP	OTHER1	TOTAL		
SAMPLE 1010B ESTIMATE, PROJECT TOTALS								428,000		
****PROJECT SUBTOTALS****				143,833	198,801	22,614	63,000	428,249		
BASE BID				171.30/SF	12012@ \$35.65SF	143,833	198,801	22,614	63,000	428,249
* NOTE: INCLUDES DISTRIBUTED COST ITEMS.										
-FIRST BUILDING--M1				67.28/SF	4004@ \$42.01SF	48,109	52,088	4,997	63,000	168,204
** Note: Level above 01 substructure, "First Building"										
01	SUBSTRUCTURE	30.33/SF	4004@ \$18.94SF	7,751	4,542	1,030	62,500	75,823		
*** NOTE: DESCRIBE ADDED FEATURES OF M-1										
02	SUPERSTRUCTURE	7.32/SF	4004@ \$4.57SF	11,270	4,076	2,947	0	18,293		
03	EXTERIOR CLOSURE	23.31/SF	3358@ \$17.35SF	20,736	36,568	467	500	58,272		
04	ROOFING	3.10/SF	5080@ \$1.52SF	4,327	2,950	463	0	7,741		
06	INTERIOR FINISHES	3.23/SF	4004@ \$2.02SF	4,025	3,961	90	0	8,076		
-SECOND BUILDING--M2				40.78/SF	4004@ \$25.46SF	46,781	50,131	5,036	0	101,948
** NOTE: Building type is CMU with EIFS										
01	SUBSTRUCTURE	5.82/SF	4004@ \$3.64SF	8,621	4,826	1,107	0	14,555		
02	SUPERSTRUCTURE	7.32/SF	4004@ \$4.57SF	11,270	4,076	2,947	0	18,293		
03	EXTERIOR CLOSURE	21.31/SF	3358@ \$15.87SF	18,538	34,317	429	0	53,285		
04	ROOFING	3.10/SF	5080@ \$1.52SF	4,327	2,950	463	0	7,741		
06	INTERIOR FINISHES	3.23/SF	4004@ \$2.02SF	4,025	3,961	90	0	8,076		
-THIRD BUILDING--M3				42.53/SF	4004@ \$26.55SF	48,944	52,309	5,073	0	106,326
01	SUBSTRUCTURE	5.78/SF	4004@ \$3.61SF	8,585	4,753	1,107	0	14,445		
02	SUPERSTRUCTURE	7.32/SF	4004@ \$4.57SF	11,270	4,076	2,947	0	18,293		
03	EXTERIOR CLOSURE	23.11/SF	3358@ \$17.20SF	20,736	36,568	467	0	57,772		
04	ROOFING	3.10/SF	5080@ \$1.52SF	4,327	2,950	463	0	7,741		
06	INTERIOR FINISHES	3.23/SF	4004@ \$2.02SF	4,025	3,961	90	0	8,076		
-UNIT PRICE ITEMS				17.23/SF	2@ \$21537.62EA	0	35,992	7,083	0	43,075
88	BID ITEMS	17.23/SF	2@ \$21537.62EA	0	35,992	7,083	0	43,075		
-ADDITIVES, BASE BID				3.48/SF	3@ \$2898.63EA	0	8,271	425	0	8,696
ADDITIVES, PRIMARY				3.48/SF	3@ \$2898.63EA	0	8,271	425	0	8,696

WARNING: BASE BID EXCEEDS AUTHORIZED CONSTRUCTION FUNDS BY 428,099 DOLLARS. CONTACT THE PROJECT MANAGER.

Success "B" System Report

MIL-HDBK-1010B

C-ASSEMBLY CATEGORY REPORT
 SUBMITTAL: FINAL
 SOFTWARE VERSION: SUCCESS 3.1
 REPORT WRITER VERSION: R&R 6.0
 NAVFAC01.RP5 REPORT REVISION 2 NOVEMBER 1997

CONSTRUCTION CONTRACT: N62470-99-B-9999
 DATABASE USED: CES/UPB95
 PRINTING DATE: 01/20/1998
 Page No. 1
 ESTIMATE NAME: SAMPLE 1010B

PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS
 ESTIMATOR: H.G.Wells
 PROJECT SIZE: 2,500.00SF
 CONSTRUCTION FUNDS AVAILABLE: 150 USD
 CURRENCY: DOLLARS

CAT CODE: 101-11
 UIC: N62863
 PROJECT #: P-123
 DATE OF ESTIMATE: 01/01/97
 BID DATE: FEBRUARY, 1997

WBS CODE	DESCRIPTION	COST/PROJECT	COST/	TOTAL MARKED UP COSTS					TOTAL	
		UOM BASED ON 2,500 SF	WBS UNIT	MATL	LABOR	EQUIP	OTHER1			
SAMPLE 1010B ESTIMATE, PROJECT TOTALS									428,000	
*****PROJECT SUBTOTALS*****				143,833	198,801	22,614	63,000	428,249		
BASE BID				171.30/SF	12012@535.65/SF	143,833	198,801	22,614	63,000	428,249
> NOTE: INCLUDES DISTRIBUTED COST ITEMS.										
-FIRST BUILDING-M1		67.28/SF	4004@542.01/SF	48,109	52,098	4,997	63,000	168,204		
>> Note: Level above 01 substructure, "First Building"										
01 SUBSTRUCTURE		30.33/SF	4004@518.94/SF	7,751	4,542	1,030	62,500	75,823		
* NOTE: DESCRIBE ADDED FEATURES OF M-1										
0101 STANDARD FOUNDATIONS		1.66/SF	4004@51.03/SF	2,695	1,269	178	0	4,142		
** Additional information for this level.										
010101 WALL FOUNDATIONS		1.66/SF	4004@51.03/SF	2,695	1,269	178	0	4,142		
0103 SLAB ON GRADE		28.67/SF	4004@517.90/SF	5,056	3,273	853	62,500	71,682		
010301 STANDARD SLAB ON GRADE		28.67/SF	4004@517.90/SF	5,056	3,273	853	62,500	71,682		
02 SUPERSTRUCTURE		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
0202 ROOF CONSTRUCTION		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
020201 STRUCTURAL FRAME		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
03 EXTERIOR CLOSURE		23.31/SF	3358@517.35/SF	20,736	36,568	467	500	58,272		
0301 EXTERIOR WALLS		21.31/SF	3358@515.87/SF	18,538	34,317	429	0	53,285		
030101 EXTERIOR SKIN		18.86/SF	3358@514.04/SF	14,284	32,462	393	0	47,138		
030102 INSULATION & VAPOR BARRIER		2.46/SF	3358@51.83/SF	4,254	1,856	36	0	6,146		
0302 EXTERIOR WINDOWS		1.01/SF	430@58.63/SF	781	1,710	30	0	2,521		
030201 WINDOWS		1.01/SF	430@58.63/SF	781	1,710	30	0	2,521		
0303 EXTERIOR PERSONNEL DOORS		0.99/SF	2@51233.15/EA	1,417	541	8	500	2,466		
030302 SOLID DOORS		0.99/SF	2@51233.15/EA	1,417	541	8	500	2,466		
04 ROOFING		3.10/SF	5080@51.52/SF	4,327	2,950	463	0	7,741		
0401 ROOFING		3.10/SF	5080@51.52/SF	4,327	2,950	463	0	7,741		
040101 ROOF COVERINGS		1.17/SF	5080@50.57/SF	1,464	1,430	26	0	2,920		
040103 ROOF INSULATION & FILL		1.93/SF	4004@51.20/SF	2,864	1,521	437	0	4,821		
06 INTERIOR FINISHES		3.23/SF	4004@52.02/SF	4,025	3,961	90	0	8,076		
0601 WALL FINISHES		1.36/SF	4004@50.85/SF	1,406	1,956	46	0	3,408		
060105 PAINTING TO WALL		1.36/SF	4004@50.85/SF	1,406	1,956	46	0	3,408		
0602 FLOORING & FLOOR FINISHES		0.12/SF	915@50.31/SF	152	134	2	0	288		
060204 RESILIENT FLOORING		0.12/SF	4037@50.07/SF	152	134	2	0	288		
0603 CEILING & CEILING FINISHES		1.75/SF	4037@51.08/SF	2,467	1,871	42	0	4,380		
060303 GYPSUM WALLBOARD CEILING FINISHES		0.87/SF	4037@50.54/SF	1,050	1,096	24	0	2,170		
060306 PAINTING & STAINING CEILINGS		0.88/SF	4037@50.55/SF	1,417	775	18	0	2,210		
-SECOND BUILDING-M2		40.78/SF	4004@525.46/SF	46,781	50,131	5,036	0	101,948		
>> NOTE: Building type is CMU with EIFS										
01 SUBSTRUCTURE		5.82/SF	4004@53.64/SF	8,621	4,826	1,107	0	14,555		
0101 STANDARD FOUNDATIONS		1.56/SF	4004@50.97/SF	2,482	1,243	167	0	3,892		
010101 WALL FOUNDATIONS		1.56/SF	4004@50.97/SF	2,482	1,243	167	0	3,892		
0103 SLAB ON GRADE		4.26/SF	4004@52.66/SF	6,138	3,583	941	0	10,662		
010301 STANDARD SLAB ON GRADE		4.26/SF	4004@52.66/SF	6,138	3,583	941	0	10,662		
02 SUPERSTRUCTURE		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
0202 ROOF CONSTRUCTION		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
020201 STRUCTURAL FRAME		7.32/SF	4004@54.57/SF	11,270	4,076	2,947	0	18,293		
03 EXTERIOR CLOSURE		21.31/SF	3358@515.87/SF	18,538	34,317	429	0	53,285		
0301 EXTERIOR WALLS		21.31/SF	3358@515.87/SF	18,538	34,317	429	0	53,285		
030101 EXTERIOR SKIN		18.86/SF	3358@514.04/SF	14,284	32,462	393	0	47,138		
030102 INSULATION & VAPOR BARRIER		2.46/SF	3358@51.83/SF	4,254	1,856	36	0	6,146		
04 ROOFING		3.10/SF	5080@51.52/SF	4,327	2,950	463	0	7,741		
0401 ROOFING		3.10/SF	5080@51.52/SF	4,327	2,950	463	0	7,741		
040101 ROOF COVERINGS		1.17/SF	5080@50.57/SF	1,464	1,430	26	0	2,920		
040103 ROOF INSULATION & FILL		1.93/SF	4004@51.20/SF	2,864	1,521	437	0	4,821		
06 INTERIOR FINISHES		3.23/SF	4004@52.02/SF	4,025	3,961	90	0	8,076		
0601 WALL FINISHES		1.36/SF	4004@50.85/SF	1,406	1,956	46	0	3,408		
060105 PAINTING TO WALL		1.36/SF	4004@50.85/SF	1,406	1,956	46	0	3,408		
0602 FLOORING & FLOOR FINISHES		0.12/SF	915@50.31/SF	152	134	2	0	288		
060204 RESILIENT FLOORING		0.12/SF	4037@50.07/SF	152	134	2	0	288		
0603 CEILING & CEILING FINISHES		1.75/SF	4037@51.08/SF	2,467	1,871	42	0	4,380		
060303 GYPSUM WALLBOARD CEILING FINISHES		0.87/SF	4037@50.54/SF	1,050	1,096	24	0	2,170		

Success "C" Assembly Category Report

MIL-HDBK-1010B

D-MARKUP REPORT

SUBMITTAL: FINAL
 SOFTWARE VERSION: SUCCESS 3.1
 REPORT WRITER VERSION: R&R 6.0
 C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 2 NOVEMBER 1997

CONSTRUCTION CONTRACT: N62470-99-B-9999
 DATABASE USED : CES/UPB95
 PRINTING DATE : 01/20/98
 PAGE NUMBER : 1
 ESTIMATE NAME : SAMPLE 1010B

PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS
 ESTIMATOR: H.G.Wells
 PROJECT SIZE: 2,500.00 SF
 AUTHORIZED CONSTRUCTION FUNDS: 150 USD

CAT CODE: 101-11
 UIC: N62863
 PROJECT #: P-123
 DATE OF ESTIMATE: 01/01/97
 BID DATE: FEBRUARY, 1997

CONTRACTOR	DESCRIPTION	MATERIAL	LABOR	EQUIPMENT	OTHER1
01	PRIME				
	TAXES ON MATERIAL	4.50	0.00	0.00	0.00
	TAXES AND INSURANCE ON LABOR	0.00	24.00	0.00	0.00
	TAXES ON EQUIPMENT	0.00	0.00	4.50	0.00
	DESIGN CONTINGENCIES	0.00	0.00	0.00	0.00
	PRIME OVERHEAD	12.00	12.00	12.00	0.00
	PRIME PROFIT	10.00	10.00	10.00	0.00
	BOND	1.00	1.00	1.00	0.00
	MISCELLANEOUS TAXES	0.00	0.00	0.00	0.00
	CQC	0.00	0.00	0.00	0.00
	ESCALATION	0.00	0.00	0.00	0.00
	COMPOSITE MARKUPS FOR 01				
	MATERIAL COMPOSITE MARKUP	1.3003			
	LABOR COMPOSITE MARKUP	1.5430			
	EQUIPMENT COMPOSITE MARKUP	1.3003			
	OTHER1 COMPOSITE MARKUP	1.0000			
03	SYSTEM 03 CONTRACTOR				
	PRIME OVERHEAD ON SUBS WORK	5.00	5.00	5.00	5.00
	PRIME PROFIT ON SUBS WORK	5.00	5.00	5.00	5.00
	COMPOSITE MARKUPS FOR 03				
	MATERIAL COMPOSITE MARKUP	1.1025			
	LABOR COMPOSITE MARKUP	1.1025			
	EQUIPMENT COMPOSITE MARKUP	1.1025			
	OTHER1 COMPOSITE MARKUP	1.1025			
12	SYSTEM 12 CONTRACTOR				
	PRIME OVERHEAD ON SUBS WORK	5.00	5.00	5.00	0.00
	PRIME PROFIT ON SUBS WORK	5.00	5.00	5.00	0.00
	COMPOSITE MARKUPS FOR 12				
	MATERIAL COMPOSITE MARKUP	1.1025			
	LABOR COMPOSITE MARKUP	1.1025			
	EQUIPMENT COMPOSITE MARKUP	1.1025			
	OTHER1 COMPOSITE MARKUP	1.0000			

MIL-HDBK-1010B

E--DETAIL REPORT UNBURDENED

FINAL

SOFTWARE VERSION: SUCCESS 3.1

REPORT WRITER VERSION: R&R 6.0

C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 20 JANUARY 1998

CONSTRUCTION CONTRACT: N62470-99-B-9999

ESTIMATE NAME: SAMPLE 1010B

DATABASE USED: CES/UPB95

PRINTING DATE: 01/20/1998

Page No. 1

PROJECT: MONSTER BEQ

LOCATION: ANYWHERE NAS

ESTIMATOR: H.G.Wells

PROJECT SIZE: 2,500.00SF

CONSTRUCTION FUNDS AVAILABLE: 150 USD

CURRENCY: DOLLARS

CAT CODE: 101-11

UIC: N62863

PROJECT #: P-123

DATE OF ESTIMATE: 01/01/97

BID DATE: FEBRUARY, 1997

WBS	DESCRIPTION	QTY UM	TOTAL COSTS				TOTAL
DBASE SOURCE	Contractor/Crew		MATERIAL	LABOR	EQUIPMENT	OTHER1	
01 SUBSTRUCTURE FIRST BUILDING--M1							
NOTE: DESCRIBE ADDED FEATURES OF M-1							
0101 STANDARD FOUNDATIONS							
Additional information for this level.							
010101 WALL FOUNDATIONS LEVEL CONTRACTOR ID APPLIED--01							
022211201	Trench, 1/2 CY Hyd Excav, Lt Soil 80 CY/Hr (61M3)/Hr		0.00	0.34	0.46	0.00	0.80
UPB	***CHG-CODEB 0.025hrs/unit 2 TOTAL HRS USER CHANGE	65.40CY	0	22	30	0	52
0322101001	Gr 50 ReSteel, Flgs & Slabs, #3-#6		498.22	263.23	3.17	0.00	764.62
UPB	03/SIWRC 12.8hrs/unit 5 TOTAL HRS	0.36TON	179	95	1	0	275
042202002	Fdn Wall CMU, 8"x16"x8" (21cm) Reg (Sand Aggregate)		1.03	1.80	0.03	0.00	2.85
UPB	03/AMABF 0.112hrs/unit 29 TOTAL HRS	258.00SF	266	464	7	0	736
022224102	Foundation Backfill, by Machine 6" Lift Without Compaction		0.00	0.26	0.35	0.00	0.61
UPB	03/CODEB 0.019hrs/unit 1 TOTAL HRS	49.70CY	0	13	17	0	30
022224202	Compact Backfill w/Vib Plate Around Structures and Trenches		0.00	1.38	0.16	0.00	1.54
UPB	***CLACC 0.203hrs/unit 10 TOTAL HRS	49.70CY	0	69	8	0	77
031101114	Cont Wall Footing Forms, 4 Uses Plywd Forms, Form & Strip w/Acc		0.50	0.84	0.04	0.00	1.38
UPB	***ACARJ 0.066hrs/unit 3 TOTAL HRS	44.00SF	22	37	2	0	61
033111125	Pour Cont Flgs, Shlw, Conc Pump Place 3000 PSI Conc Foundations		54.00	2.23	2.40	0.00	58.63
UPB	03/ALABI 0.267hrs/unit 7 TOTAL HRS	26.20CY	1,415	58	63	0	1,536
	Subtotal Direct Costs		1,882	758	128	0	2,767
	Subcontractor Markups		191	65	9	0	264
	Prime Contractor 01 Markups		622	447	41	0	1,110
TOTAL 010101 WALL FOUNDATIONS			2,695	1,269	178	0	4,142
4,004.00 SF			0.67	0.32	0.04	0.00	1.03
Level Unit Cost-->							
SUBTOTAL 0101 STANDARD FOUNDATIONS			1,882	758	128	0	65,268
MARKUP			1,432	1,674	1,392	0,000	0,063
TOTAL 0101 STANDARD FOUNDATIONS			2,695	1,269	178	0	4,142
0103 SLAB ON GRADE							
010301 STANDARD SLAB ON GRADE LEVEL CONTRACTOR ID APPLIED--01							
033111164	Pour Slab on Gr, >= 6", Dir Chute >= (15 cm) Place 3000 PSI Conc		54.00	2.08	0.24	0.00	56.32
UPB	***ALABA 0.274hrs/unit 14 TOTAL HRS	52.20CY	2,819	109	12	0	2,940
032201002	Weld Wire Fab in Slabs, 6x6x#8 30 #CSF, (W 2.0 x W 2.0), < 5 To		0.10	0.14	0.00	0.00	0.25
UPB	03/SIWRB 0.007hrs/unit 31 TOTAL HRS	4,413.00SF	441	635	7	0	1,083
071115002	6 Mil Polyethylene Vapor Barrier		3.18	3.96	0.10	0.00	7.24
UPB	***ACARA 0.27hrs/unit 12 TOTAL HRS	45.00CSF	143	178	4	0	326
026112001	Graded Crushed Agg		4.14	3.19	6.60	0.00	13.93
UPB	***XSABA 0.256hrs/unit 21 TOTAL HRS	82.00CY	339	262	541	0	1,143
FLOOR TO BE PAINTED BY USER!! NO FLOOR FINISH IS TO BE INCLUDED IN PROJECT.							
026141203	Concrete Pavement Curing		0.20	0.22	0.01	0.00	0.43
UPB	03/ULABA 0.033hrs/unit 15 TOTAL HRS	445.00SY	89	99	2	0	190
033114105	Conc Floor Finishes, Sll Trowel		0.00	0.19	0.02	0.00	0.21
UPB	***ACMAC 0.016hrs/unit 64 TOTAL HRS	4,005.00SF	0	764	87	0	851
102901111	Termite Pretreatment, Commercial Soil Poisoning Under Slab		0.10	0.00	0.00	2500.00	2,500.10
UPB	***CHG- USER CHANGE	25.00SF	3	0	0	62,500	62,503
	Subtotal Direct Costs		3,834	2,046	655	62,500	69,035
	Subcontractor Markups		54	75	1	0	131
	Prime Contractor 01 Markups		1,168	1,152	197	0	2,516
TOTAL 010301 STANDARD SLAB ON GRADE			5,056	3,273	853	62,500	71,682
4,004.00 SF			1.26	0.82	0.21	15.61	17.90
Level Unit Cost-->							
SUBTOTAL 0103 SLAB ON GRADE			3,834	2,046	655	62,500	69,035
MARKUP			1,319	1,600	1,302	1,000	1,038
TOTAL 0103 SLAB ON GRADE			5,056	3,273	853	62,500	71,682

Success "E" Detail Report Unburdened p.1

MIL-HDBK-1010B

E--DETAIL REPORT UNBURDENED
FINAL

ESTIMATE NAME: SAMPLE 1010B
PRINTING DATE: 01/20/1998
Page No. 2

WBS CODE	DESCRIPTION	QTY UM	TOTAL COSTS				
DBASE SOURCE	Contractor/Crew		MATERIAL	LABOR	EQUIPMENT	OTHER1	TOTAL

010301 STANDARD SLAB ON GRADE LEVEL CONTRACTOR ID APPLIED--01

SUBTOTAL 01 SUBSTRUCTURE			5,716	2,804	782	62,500	71,802
MARKUP			1,356	1,620	1,317	1,000	1,056
TOTAL 01 SUBSTRUCTURE			7,761	4,542	1,030	62,500	75,823

02 SUPERSTRUCTURE FIRST BUILDING--M1

0202 ROOF CONSTRUCTION

020201 STRUCTURAL FRAME LEVEL CONTRACTOR ID APPLIED--01

061112418	Pre-Assem Wood Truss, 42 to 48 Ft Long		127.50	26.85	42.92	0.00	197.27
UPB	***VACARR 2.25hrs/unit	110 TOTAL HRS	8,248	1,316	2,103	0	9,866
061112500	Pre-Assem Wood Truss, 42 to 48 Ft Long, Gable		152.88	26.85	42.92	0.00	222.65
UPB	***VACARR 2.25hrs/unit	5 TOTAL HRS USER CHANGE	306	54	86	0	445
061113102	Roof Decking, 1/2" Thk Int PlywoodStd Grde Applied to Wood Rafter		0.36	0.19	0.01	0.00	0.56
UPB	***VACARD 0.013hrs/unit	62 TOTAL HRS	1,728	913	55	0	2,696
061118401	Blocking to Wood, 2x4 to 2x8 Fir Douglas Fir		0.49	0.73	0.04	0.00	1.27
UPB	***VACARC 0.05hrs/unit	13 TOTAL HRS	123	183	11	0	317
061113101	Roof Decking, 3/8" Thk Int PlywoodStd Grde Applied to Wood Rafter		0.31	0.18	0.01	0.00	0.50
UPB	***VACARD 0.012hrs/unit	5 TOTAL HRS	127	72	4	0	203
061119543	Misc Fram'g, 1x8-1x10 Douglas FirLt Framing & Furring, Random Lgth		0.76	0.53	0.03	0.00	1.32
UPB	***VACARD 0.036hrs/unit	5 TOTAL HRS	114	79	5	0	198
061118403	Blocking to Conc, 2x4 to 2x8 Fir Douglas Fir		0.49	0.57	0.03	0.00	1.10
UPB	***VACARC 0.039hrs/unit	2 TOTAL HRS	22	26	2	0	49
Subtotal Direct Costs			8,667	2,642	2,266	0	13,575
Prime Contractor 01 Markups			2,603	1,434	681	0	4,718
TOTAL 020201 STRUCTURAL FRAME			11,270	4,076	2,947	0	18,293
4,004.00 SF			2.81	1.02	0.74	0.00	4.57
			Level Unit Cost-->				
SUBTOTAL 0202 ROOF CONSTRUCTION			8,667	2,642	2,266	0	13,575
MARKUP			1,300	1,543	1,300	0.000	1,348
TOTAL 0202 ROOF CONSTRUCTION			11,270	4,076	2,947	0	18,293

SUBTOTAL 02 SUPERSTRUCTURE			8,667	2,642	2,266	0	13,575
MARKUP			1,300	1,543	1,300	0.000	1,348
TOTAL 02 SUPERSTRUCTURE			11,270	4,076	2,947	0	18,293

03 EXTERIOR CLOSURE FIRST BUILDING--M1

0301 EXTERIOR WALLS

030101 EXTERIOR SKIN LEVEL CONTRACTOR ID APPLIED--01

042202002	Fdn Wall CMU, 8"x16"x8"(21cm)Reg (Sand Aggregate)		1.03	1.80	0.03	0.00	2.85
UPB	***VAMABF 0.112hrs/unit	391 TOTAL HRS	3,502	6,113	86	0	9,702
042208011	8"x16"x8"(21cm)Reg Lintel Block (Incl Bond Beams), Block Only		1.29	1.88	0.03	0.00	3.19
UPB	***VAMABF 0.117hrs/unit	87 TOTAL HRS	955	1,390	20	0	2,364
041101101	Grout Beams & Lintels - 8"Block Conc Fill Only, 0.20 CF/LF, 8"Deep		0.18	0.62	0.01	0.00	0.81
UPB	***VAMABD 0.039hrs/unit	37 TOTAL HRS	172	593	8	0	773
041101202	Grout Conc Block Cores - 8"Block Conc Fill Block Solid(0.258CF/SF		0.25	0.95	0.01	0.00	1.21
UPB	***VAMABD 0.05hrs/unit	72 TOTAL HRS	301	1,147	15	0	1,463
041602001	Horiz Truss Jt Reinf in 8" Wall Use 6" Wide Truss for 8" Wall		7.99	8.25	0.11	0.00	16.35
UPB	***VAMABA 0.455hrs/unit	27 TOTAL HRS	479	495	6	0	981
042101201	Select Common Brick for Veneer (6.4/SF)		1.53	3.10	0.04	0.00	4.68
UPB	***VAMABG 0.194hrs/unit	683 TOTAL HRS	5,386	10,917	157	0	16,459
055011002	1/2"D x 12"L, J-Type Anchor Bolt(31cm Long)w/Nut,Washer,Template		2.23	4.52	0.12	0.00	6.87
UPB	***VACARB 0.308hrs/unit	26 TOTAL HRS	190	384	10	0	584
Subtotal Direct Costs			10,985	21,039	302	0	32,326
Prime Contractor 01 Markups			3,299	11,423	91	0	14,813
TOTAL 030101 EXTERIOR SKIN			14,284	32,462	393	0	47,138
3,358.00 SF			4.25	9.67	0.12	0.00	14.04
			Level Unit Cost-->				

030102 INSULATION & VAPOR BARRIER LEVEL CONTRACTOR ID APPLIED--01

071601001	Asph Dampproofing, Primer + 1 Coat		7.09	15.97	0.35	0.00	23.41
UPB	***VARFCA 1.504hrs/unit	53 TOTAL HRS	250	582	12	0	824
072121011	2" Urethane, R11.7 Rigid Insul		0.90	0.19	0.01	0.00	1.10
UPB	***VACARA 0.013hrs/unit	44 TOTAL HRS	3,022	640	16	0	3,678

MIL-HDBK-1010B

F--ERROR REPORT

FINAL

SOFTWARE VERSION: SUCCESS 3.1

REPORT WRITER VERSION: R&R 6.0

C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 2 NOVEMBER 1997

CONSTRUCTION CONTRACT: N62470-99-B-9999

ESTIMATE NAME: SAMPLE 1010B

DATABASE USED: CES/UPB95

PRINTING DATE: 01/20/1998

PROJECT: MONSTER BEQ

LOCATION: ANYWHERE NAS

ESTIMATOR: H.G.Wells

PROJECT SIZE: 2,500.00 SF

CAT CODE: 101-11

UIC: N62863

PROJECT #: P-123

DATE OF ESTIMATE: 01/01/97

BID DATE: FEBRUARY, 1997

ERROR DESCRIPTION	LEVEL	CODE
"OTHER" FIELD USED IN ESTIMATE; CONFIRM USAGE AT	010301	102901111
"OTHER" FIELD USED IN ESTIMATE; CONFIRM USAGE AT	030302	081201003

Success "F" Error Report

MIL-HDBK-1010B

G--END ITEM REPORT (QA ONLY)
PROJECT: MONSTER BEQ
LOCATION: ANYWHERE NAS

CONSTRUCTION CONTRACT N62470-99-B-9999
ESTIMATE NAME: SAMPLE 1010B
PRINTING DATE: 20 January 1998

WBS	DESCRIPTION	QTY	UOM	Material	Labor	Equipment	Other1
010101 WALL FOUNDATIONS							
022211201	Trench, 1/2 CY Hyd Excav, Lt Soil 80 CY/Hr (61M3)/Hr	65.40	CY	0.00	22.37	30.09	0.00
032101001	Gr 50 Resteel, Flgs & Slabs, #3-#6	0.36	TON	179.36	94.76	1.14	0.00
042202002	Fdn Wall CMU, 8"x16"x8"(21cm) Reg (Sand Aggregate)	258.00	SF	265.74	463.89	6.54	0.00
022224102	Foundation Backfill, by Machine 6" Lift Without Compaction	49.70	CY	0.00	12.92	17.38	0.00
022224202	Compact Backfill w/Vib Plate Around Structures and Trenches	49.70	CY	0.00	68.77	7.83	0.00
031101114	Cont Wall Footing Forms, 4 Uses Plywd Forms, Form & Strip w/Acc	44.00	SF	22.00	36.92	1.73	0.00
033111125	Pour Cont Flgs, Shlw, Conc Pump Place 3000 PSI Conc Foundations	26.20	CY	1,414.80	58.36	62.89	0.00
010301 STANDARD SLAB ON GRADE							
033111164	Pour Slab on Gr, >= 6", Dir Chute >= (15 cm) Place 3000 PSI Conc	52.20	CY	2,818.80	108.75	12.36	0.00
032201002	Weld Wire Fab in Slabs, 6x6x#8 30 #/CSF, (W 2.0 x W 2.0), < 5 To	4,413.00	SF	441.30	634.50	6.99	0.00
071115002	6 Mil Polyethylene Vapor Barrier	45.00	CSF	143.10	178.24	4.37	0.00
026112001	Graded Crushed Agg	82.00	CY	339.48	261.59	541.48	0.00
026141203	Concrete Pavement Curing	445.00	SY	89.00	99.12	2.21	0.00
033114105	Conc Floor Finishes, Stil Trowel	4,005.00	SF	0.00	763.54	87.38	0.00
102901111	Termite Pretreatment, Commercial Soil Poisoning Under Slab	25.00	SF	2.50	0.00	0.00	62500.00
020201 STRUCTURAL FRAME							
061112418	Pre-Assem Wood Truss, 42 to 48 Ft. Long	49.00	EA	6,247.50	1,315.53	2,103.14	0.00
061112500	Pre-Assem Wood Truss, 42 to 48 Ft. Long, Gable	2.00	EA	305.76	53.70	85.84	0.00
061131102	Roof Decking, 1/2" Thk Int Plywood Std Grde Applied to Wood Rafters	4,800.00	SF	1,728.00	912.64	55.62	0.00
061118401	Blocking to Wood, 2x4 to 2x8 Fir Douglas Fir	250.00	BF	122.50	183.38	10.69	0.00
061131101	Roof Decking, 3/8" Thk Int Plywood Std Grde Applied to Wood Rafters	410.00	SF	127.10	71.96	4.39	0.00
061119643	Misc Fram'g, 1x8-1x10 Douglas Fir Lt Framing & Furring, Random Lgth	150.00	BF	114.00	78.98	4.81	0.00
061118403	Blocking to Conc, 2x4 to 2x8 Fir Douglas Fir	45.00	BF	22.05	25.75	1.50	0.00
030101 EXTERIOR SKIN							
042202002	Fdn Wall CMU, 8"x16"x8"(21cm) Reg (Sand Aggregate)	3,400.00	SF	3,502.00	6,113.29	86.24	0.00
042208011	8"x16"x8"(21cm) Reg Lintel Block (Incl Bond Beams), Block Only	740.00	EA	954.60	1,389.94	19.61	0.00
041101101	Grout Beams & Lintels - 8" Block Conc Fill Only, 0.20 CF/LF, 8" Deep	958.00	LF	172.44	592.56	7.95	0.00
041101202	Grout Conc Block Cores - 8" Block Conc Fill Block Solid (0.258 CF/SF)	1,205.00	SF	301.25	1,146.68	15.38	0.00
041602001	Horiz Truss Jt Reinf in 8" Wall Use 6" Wide Truss for 8" Wall	60.00	CLF	479.40	495.21	6.33	0.00
042101201	Select Common Brick for Veneer (6.4/SF)	3,520.00	SF	5,385.60	10,916.77	156.63	0.00
055011002	1/2" D x 12" L, J-Type Anchor Bolt (31cm Long) w/Nut, Washer, Template	85.00	EA	189.55	384.06	10.02	0.00
030102 INSULATION & VAPOR BARRIER							
071601001	Asph Dampproofing, Primer + 1 Coat	35.20	CSF	249.57	562.24	12.28	0.00
072121011	2" Urethane, R11.7 Rigid Insul	3,358.00	SF	3,022.20	640.40	15.70	0.00
030201 WINDOWS							
085201002	Aluminum Casement Windows, Fixed Standard Brush Finish	48.00	SF	279.84	78.86	0.67	0.00
079201101	Polyurethane Cmpd, 1/4"x1/4" Joint	20.00	CLF	180.00	987.72	21.58	0.00
042223101	6"(15cm) W Prec Conc Window Sill (Stock Section)	13.20	LF	140.84	41.87	0.56	0.00
030302 SOLID DOORS							
081201002	3"x7" Narrow Style Al Door Unit Commercial	2.00	EA	1,090.00	350.40	6.40	0.00
081201003	QUOTE: Stainless Kickplates	2.00	EA	0.00	0.00	0.00	500.00

Page 1

Success "G" End Item Report

MIL-HDBK-1010B

H-PROPERTY REPORT (QA ONLY)
 PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS

CONSTRUCTION CONTRACT: N62470-99-B-9999
 ESTIMATE NAME: SAMPLE 1010B
 PRINTING DATE: 1/20/98

Field Name User Entry (** Designates notes for User Entry field)

EST_PHASE FINAL
 CONTRACT N62470-99-B-9999
 EST_NAME SAMPLE 1010B
 PROJECT MONSTER BEQ
 LOCATION ANYWHERE NAS
 PROJ_SIZE 2500.00
 PROJ_UM SF
 CAT_CODE 101-11
 UIC N62863
 P_NO P-123
 DATE_EST 01/01/97
 BID_DATE FEBRUARY, 1997
 DATABASE CES/UPB95
 COMPANY LANTDIV CODE 4071
 ESTIMATOR H.G.Wells
 FUNDS_AUTH 150
 CURRENCY DOLLARS ** Used together with Conversion, this entry controls the currency used in reports. The default is DOLLARS.
 CONVERSION 0.00 ** Standard entry is Dollars; enter the desired exchange rate in this field to have reports show currency other than dollars.
 FUTURE NOT USED (1) ** Not used at this time
 FUTURE NOT USED (2) ** Not used at this time
 DISTABSORB NOT USED (3) ** Not used at this time
 SOFTMETRIC N ** Enter "Y" to report converted QTY, UOM, and pricing to "Soft" metric. If metric data was entered, entering "Y" will cause errors.
 UPBCHK Y ** Enter "Y" to trigger asterisk beside user changes to UPB line items in the estimate and note "USER CHANGE" in description..
 UPBTITLE NOT USED (4) ** Not used at this time
 PRINT NOTE Y ** Enter "Y" to enable printing of notes in various Navy reports.

Success "H" Property Report

I-SPEC SUMMARY REPORT

SUBMITTAL: FINAL
 SOFTWARE VERSION: SUCCESS 3.1
 REPORT WRITER VERSION: R&R 6.0
 C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 2 NOVEMBER 1997

CONSTRUCTION CONTRACTN62470-99-B-9999

DATABASE USED: CES/UPB95

PRINTING DATE: 1/20/98

Page No. 1

ESTIMATE NAME: **SAMPLE 1010B**

PROJECT: MONSTER BEQ
 LOCATION: ANYWHERE NAS
 ESTIMATOR: H.G.Wells
 PROJECT SIZE: 2500.00 SF
 CONSTRUCTION FUNDS AVAILABLE: 150 USD
 CURRENCY: DOLLARS

CAT CODE: 101-11
 UIC: N62863
 PROJECT #: P-123
 DATE OF ESTIMATE: 01/01/97
 BID DATE: FEBRUARY, 1997

CSI CODE	DESCRIPTION	MATERIAL	LABOR	EQUIPMENT	OTHER1
02 Site Work		1,798	2,283	2,484	0
02220	Excavation	0	104	117	0
02610	Paving	1,798	1,294	2,257	0
03 Concrete		20,162	8,456	711	0
03110	Structural Cast-In-Place Concrete Formwork	86	171	7	0
03210	Reinforcing Steel	724	454	5	0
03220	Welded Wire Fabric	1,898	3,238	30	0
03310	Normal Weight Structural Concrete	17,455	4,593	669	0
04 Masonry		43,586	98,030	1,168	0
04110	Cement And Lime Mortars	1,848	8,051	91	0
04160	Joint Reinforcement	1,870	2,292	25	0
04210	Brick Masonry	21,009	50,532	611	0
04220	Concrete Unit Masonry	18,859	37,026	440	0
05 Metals		739	37,770	7,122	0
05120	Structural Steel	0	15,822	5,524	0
05130	Structural Aluminum	0	20,170	1,559	0
05500	Metal Fabrication	739	1,778	39	0
06 Wood & Plastics		33,809	20,500	9,264	0
06110	Framing And Sheathing	33,809	15,943	9,030	0
07 Thermal & Moisture Protection		26,809	18,348	1,572	0
07110	Membrane Waterproofing	596	881	18	0
07160	Bituminous Dampproofing	974	2,603	48	0
07210	Building Insulation	20,380	4,562	1,310	0
07310	Shingles	4,391	4,290	79	0
07920	Sealants And Caulking	468	3,048	56	0
08 Doors & Windows		3,562	1,325	18	500
08120	Aluminum Doors And Frames	2,835	1,081	17	500
08520	Aluminum Windows	728	243	2	0
09 Finishes		12,074	11,883	270	0
09260	Gypsum Wallboard Systems	3,149	3,289	72	0
09660	Resilient Tile Flooring	457	401	7	0
09920	Interior Painting	8,468	8,194	191	0
10 Specialties		1,294	207	4	62,500
10290	Pest Control	1,294	207	4	62,500
PROJECT SUBTOTALS		143,833	198,801	22,614	63,000
			PROJECT TOTAL		428,249

Records printed: 126

Success "I" Specification Summary Report

MIL-HDBK-1010B

J--LABOR SUMMARY REPORT

SUBMITTAL: FINAL

SOFTWARE VERSION: SUCCESS 3.1

REPORT WRITER VERSION : R&R 6.0

C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION DATE 2 NOVEMBER 1997

CONSTRUCTION CONTRACTN62470-99-B-9999

DATABASE USED: CES/UPB95

PRINTING DATE:1/20/98

Page No. 1

ESTIMATE NAME: SAMPLE 1010B

PROJECT: MONSTER BEQ

LOCATION: ANYWHERE NAS

ESTIMATOR: H.G.Wells

PROJECT SIZE: 2500.00 SF

CONSTRUCTION FUNDS AVAILABLE: 150 USD

CURRENCY: DOLLARS:

CAT CODE: 101-11

UIC: N62863

PROJECT #: P-123

DATE OF ESTIMATE: 01/01/97

BID DATE: FEBRUARY, 1997

CODE	DESCRIPTION	DIRECT BASIC PROJECT RATE	FRINGE DOLLARS	FRINGE %	TOTAL PROJECT RATE	UPB RATE LESS TAX AND INS.	INCREASE OR DECREASE	TOTAL PROJECT HOURS
B-A001	Asbestos Workers	\$15.58	\$4.17	26.8%	\$19.75	\$19.48	1.4%	128.1
B-B002	Bricklayers	\$14.63	\$3.41	23.3%	\$18.04	\$13.53	33.3%	2,235.8
B-B003	Bricklayers, (Semi-Skill	\$9.60	\$3.41	35.5%	\$13.01	\$10.72	21.4%	1,460.7
B-C001	Carpenters	\$11.98	\$2.59	21.6%	\$14.57	\$22.89	-36.3%	1,473.6
B-C002	Cement Finishers	\$11.87			\$11.87	\$16.92	-29.8%	202.0
B-E003	Equip. Operators, Crane/	\$16.42	\$4.29	26.1%	\$20.71	\$19.11	8.4%	72.2
B-E005	Equip. Operators, Medium	\$10.18	\$4.29	42.1%	\$14.47	\$13.11	10.4%	2.6
B-E006	Equip. Operators, Oilers	\$10.18	\$4.29	42.1%	\$14.47	\$13.11	10.4%	68.3
B-G001	Glaziers	\$14.10	\$2.23	15.8%	\$16.33	\$16.97	-3.8%	9.6
B-L001	Laborers, (Semi-Skilled)	\$6.65			\$6.65	\$9.20	-27.7%	222.9
B-P001	Painters, Ordinary	\$10.51	\$0.70	6.7%	\$11.21	\$10.33	8.5%	469.5
B-R001	Rodmen, (Reinforcing)	\$16.40	\$4.04	24.6%	\$20.44	\$21.19	-3.5%	106.5
B-R002	Roofers, Composition	\$10.52			\$10.52	\$14.50	-27.4%	606.6
B-S006	Structural Steel Workers	\$16.40	\$5.40	32.9%	\$21.80	\$21.19	2.9%	1,044.2
B-T002	Tile Layers, (Floor)	\$9.30			\$9.30	\$11.02	-15.6%	27.6
B-T004	Truck Drivers, Heavy	\$8.51			\$8.51	\$8.51	0.0%	153.0
X-E004	Outside Equip. Operators	\$14.15	\$4.29	30.3%	\$18.44	\$17.38	6.1%	23.6
X-L001	Outside Laborers, (Semi-	\$7.50	\$1.25	16.7%	\$8.75	\$7.15	22.4%	23.6
X-T002	Outside Truck Drivers, L	\$8.41	\$0.40	4.8%	\$8.81	\$14.38	-38.7%	15.7
(AVERAGE PROJECT WAGE)					\$15.43	(TOTAL PROJECT LABOR HOURS)		8,346

NOTE: LABOR ACCUMULATES FOR DETAIL LINE ITEMS WITH ASSIGNED CREWS (RESOURCES).

Success "J" Labor Summary Report

MIL-HDBK-1010B

K--HARD COPY PRICING DATABASE
SOFTWARE VERSION: SUCCESS 3.1
REPORT WRITER VERSION: R&R 6.0
C:\SC30\SYSTEM\NAVFAC01.RP5 REPORT REVISION 2 NOVEMBER 1997

DATABASE USED:CES/UPB95
PRINTING DATE: 01/20/1998

CODE	DESCRIPTION	UM	MATERIAL	LABOR	EQUIP	OTHER1
01 General Conditions						
01010 WALL FOUNDATIONS						
02221 1201	Trench, 1/2 CY Hyd Excav, Lt Soil80 CY/Hr (61M3)/Hr	CY	0.00	22.37	30.09	0.00
03210 1001	Gr 50 Resteel, Figs & Slabs, #3-#6	TON	179.36	94.76	1.14	0.00
04220 2002	Fdn Wall CMU, 8"x16"x8" (21cm) Reg (Sand Aggregate)	SF	265.74	463.89	6.54	0.00
02222 4102	Foundation Backfill, by Machine 6" Lift Without Compaction	CY	0.00	12.92	17.38	0.00
02222 4202	Compact Backfill w/Vib Plate Around Structures and Trenches	CY	0.00	68.77	7.83	0.00
03110 1114	Cont Wall Footing Forms, 4 Uses Plywd Forms, Form & Strip w/Acc	SF	22.00	36.92	1.73	0.00
03311 1125	Pour Cont Figs, Shlw, Conc Pump Place 3000 PSI Conc Foundations	CY	1,414.80	58.36	62.89	0.00
02221 1201	Trench, 1/2 CY Hyd Excav, Lt Soil80 CY/Hr (61M3)/Hr	CY	0.00	22.37	30.09	0.00
03210 1001	Gr 50 Resteel, Figs & Slabs, #3-#6	TON	179.36	94.76	1.14	0.00
04220 2002	Fdn Wall CMU, 8"x16"x8" (21cm) Reg (Sand Aggregate)	SF	265.74	463.89	6.54	0.00
02222 4102	Foundation Backfill, by Machine 6" Lift Without Compaction	CY	0.00	12.92	17.38	0.00
02222 4202	Compact Backfill w/Vib Plate Around Structures and Trenches	CY	0.00	68.77	7.83	0.00
03110 1114	Cont Wall Footing Forms, 4 Uses Plywd Forms, Form & Strip w/Acc	SF	22.00	36.92	1.73	0.00
03311 1125	Pour Cont Figs, Shlw, Conc Pump Place 3000 PSI Conc Foundations	CY	1,414.80	58.36	62.89	0.00
02221 1201	Trench, 1/2 CY Hyd Excav, Lt Soil80 CY/Hr (61M3)/Hr	CY	0.00	22.37	30.09	0.00
03210 1001	Gr 50 Resteel, Figs & Slabs, #3-#6	TON	179.36	94.76	1.14	0.00
04220 2002	Fdn Wall CMU, 8"x16"x8" (21cm) Reg (Sand Aggregate)	SF	265.74	463.89	6.54	0.00
02222 4102	Foundation Backfill, by Machine 6" Lift Without Compaction	CY	0.00	12.92	17.38	0.00
02222 4202	Compact Backfill w/Vib Plate Around Structures and Trenches	CY	0.00	68.77	7.83	0.00
03110 1114	Cont Wall Footing Forms, 4 Uses Plywd Forms, Form & Strip w/Acc	SF	22.00	36.92	1.73	0.00
03311 1125	Pour Cont Figs, Shlw, Conc Pump Place 3000 PSI Conc Foundations	CY	1,414.80	58.36	62.89	0.00
01030 STANDARD SLAB ON GRADE						
03311 1164	Pour Slab on Gr, >= 6", Dir Chute >= (15 cm) Place 3000 PSI Conc	CY	2,818.80	108.75	12.36	0.00
03220 1002	Weld Wire Fab in Slabs, 6x6x#8 30 #CSF, (W 2.0 x W 2.0), < 5 To	SF	441.30	634.50	6.99	0.00
07111 5002	6 Mil Polyethylene Vapor Barrier	CSF	143.10	178.24	4.37	0.00
02611 2001	Graded Crushed Agg	CY	339.48	261.59	541.48	0.00
02614 1203	Concrete Pavement Curing	SY	89.00	99.12	2.21	0.00
03311 4105	Conc Floor Finishes, Sll Trowel	SF	0.00	763.54	87.38	0.00
10290 1111	Termite Pretreatment, Commercial Soil Poisoning Under Slab	SF	2.50	0.00	0.00	62,500.00
03311 1164	Pour Slab on Gr, >= 6", Dir Chute >= (15 cm) Place 3000 PSI Conc	CY	2,818.80	108.75	12.36	0.00
03220 1002	Weld Wire Fab in Slabs, 6x6x#8 30 #CSF, (W 2.0 x W 2.0), < 5 To	SF	441.30	634.50	6.99	0.00
07111 5002	6 Mil Polyethylene Vapor Barrier	CSF	143.10	178.24	4.37	0.00
02611 2001	Graded Crushed Agg	CY	339.48	261.59	541.48	0.00
02614 1203	Concrete Pavement Curing	SY	89.00	99.12	2.21	0.00
03311 4105	Conc Floor Finishes, Sll Trowel	SF	0.00	763.54	87.38	0.00
10290 1111	Termite Pretreatment, Commercial Soil Poisoning Under Slab	SF	450.10	60.76	1.36	0.00
03311 1164	Pour Slab on Gr, >= 6", Dir Chute >= (15 cm) Place 3000 PSI Conc	CY	2,818.80	108.75	12.36	0.00
03220 1002	Weld Wire Fab in Slabs, 6x6x#8 30 #CSF, (W 2.0 x W 2.0), < 5 To	SF	441.30	634.50	6.99	0.00
07111 5002	6 Mil Polyethylene Vapor Barrier	CSF	143.10	178.24	4.37	0.00
02611 2001	Graded Crushed Agg	CY	339.48	261.59	541.48	0.00
02614 1203	Concrete Pavement Curing	SY	89.00	99.12	2.21	0.00
03311 4105	Conc Floor Finishes, Sll Trowel	SF	0.00	763.54	87.38	0.00
10290 1111	Termite Pretreatment, Commercial Soil Poisoning Under Slab	SF	450.10	60.76	1.36	0.00
02 Site Work						
02020 STRUCTURAL FRAME						
06111 2418	Pre-Assem Wood Truss, 42 to 48 Ft. Long	EA	6,247.50	1,315.53	2,103.14	0.00
06111 2500	Pre-Assem Wood Truss, 42 to 48 Ft. Long, Gable	EA	305.76	53.70	85.84	0.00
06113 1102	Roof Decking, 1/2" Thk Int Plywood Std Grde Applied to Wood Rafters	SF	1,728.00	912.64	55.62	0.00
06111 8401	Blocking to Wood, 2x4 to 2x8 Fir Douglas Fir	BF	122.50	183.38	10.69	0.00
06113 1101	Roof Decking, 3/8" Thk Int Plywood Std Grde Applied to Wood Rafters	SF	127.10	71.96	4.39	0.00
06111 9643	Misc Fram'g, 1x8-1x10 Douglas Fir Lt Framing & Furring, Random Lgth	BF	114.00	78.98	4.81	0.00
06111 8403	Blocking to Conc, 2x4 to 2x8 Fir Douglas Fir	BF	22.05	25.75	1.50	0.00
06111 2418	Pre-Assem Wood Truss, 42 to 48 Ft. Long	EA	6,247.50	1,315.53	2,103.14	0.00
06111 2500	Pre-Assem Wood Truss, 42 to 48 Ft. Long, Gable	EA	305.76	53.70	85.84	0.00

REFERENCES

NOTE: THE FOLLOWING REFERENCED DOCUMENTS FORM A PART OF THIS HANDBOOK TO THE EXTENT SPECIFIED HEREIN. USERS OF THIS HANDBOOK SHOULD REFER TO THE LATEST REVISIONS OF CITED DOCUMENTS UNLESS OTHERWISE DIRECTED.

FEDERAL/MILITARY SPECIFICATIONS, STANDARDS, BULLETINS, AND HANDBOOKS:

HANDBOOKS

MIL-HDBK-1190	Facility Planning and Design Guide
MIL-HDBK-1195	Radio Frequency Shielded Enclosures

Unless otherwise indicated, copies are available from the Naval Publications and Forms Center, Standardization Document Order Desk, Building 4D, 700 Robins Avenue, Philadelphia, PA 19111-5094.

DESIGN MANUALS AND NAVFAC P-PUBLICATIONS:

DM-13.02	Commercial Intrusion Detection Systems (IDS)
P-72	Department of the Navy Facility Category Codes

(Unless otherwise indicated, copies are available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120; private organizations may purchase design manuals and NAVFAC P-publications from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

OTHER GOVERNMENT DOCUMENTS AND PUBLICATIONS:

FAR	Federal Acquisition Regulation
-----	--------------------------------

(Available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402.)

NAVFACINST 11010.44	Shore Facilities Planning Manual
---------------------	----------------------------------

(Available from Commander, Naval Facilities Engineering Command, 200 Stovall Street, Alexandria, VA 22332-2300.)

OPNAVINST 11010.16	Command Responsibility for Shore Activity Land and Facilities
OPNAVINST 11010.20	Facilities Projects Manual

(Available from Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.)

CUSTODIAN
NAVY YD

PREPARING ACTIVITY
NAVY YD

PROJECT NO.
FACR-1075